MAIN ENTRANCE — ACALYPHA TRICOLOR.

MISSOURI

BOTANICAL GARDEN.

FOURTEENTH ANNUAL REPORT.

ST. LOUIS, MO.:
PUBLISHED BY THE BOARD OF TRUSTEES.
1903.

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* *Ex-officio.*

[1] Elected President of the Board of Public Schools of St. Louis, October 14, 1903, to succeed John Schroers, who had held that office for one year.

PREFACE.

Under direction of the Board of Trustees, the fourteenth annual report of the Missouri Botanical Garden is presented to the public. In addition to the administrative reports of the officers of the Board and the Director, this volume contains an important revision of the genus *Lonicera*, by Mr. Alfred Rehder, of the Arnold Arboretum, and a catalogue, by Mr. C. E. Hutchings, of the additions which have been made to the Sturtevant Prelinnean Library, of the Garden, since the publication of the catalogue of the original collection, in the seventh report.

The thirteenth report was issued on July 28th, 1902, which fixes the date of publication of the paper on Yuccaceae, forming the larger part of the volume, separates of which were distributed on the 30th of the same month.

These reports are sent to scientific institutions and journals in exchange for publications or specimens desirable for the Garden, and, when possible, reprints of the botanical articles they contain are presented to botanists occupied with a study of the subjects they refer to. Any of the Garden publications not out of print may be purchased at approximately the cost of publication from A. I. Eriksson, Tufts College, Mass.; R. Friedländer & Sohn, Berlin, Germany; W. Wesley & Son, London, England; or the undersigned.

WILLIAM TRELEASE.

ST. LOUIS, MO., July 28, 1903.

SAUCER GARDENING — AMORPHOPHALLUS RIVIERI.

LIST OF ILLUSTRATIONS.

Frontispiece: Main Entrance (Acalypha tricolor).

Saucer gardening (Amorphophallus Rivieri) . . . . Facing p. 7

Sotol (Dasylirion serratifolium) . . . . . " " 12

Sunday visitors . . . . . " " 15

Flowering agave (A. Toneliana) . . . . . " " 17

A specimen palm (Licuala grandis) . . . . . " " 24

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REPORTS FOR THE YEAR 1902.

REPORT OF THE OFFICERS OF THE BOARD.

SUBMITTED TO THE TRUSTEES JANUARY 14, 1903.

To the Board of Trustees of the Missouri Botanical Garden:

We herewith submit for your consideration, the financial results for the year ending December 31, 1902.

We are pleased to state that the anticipated increase of $8,000.00 in our receipts from rentals has been almost realized, the exact amount being $7,963.34 and as every store and tenement is occupied and as no vacancies are anticipated, a still further increase of about $5,000.00 for the coming year is confidently expected.

By reason of the recent condemnation proceedings instituted by terminal companies for right of way and other purposes, through the district lying between Main street and the Levee south of Washington avenue, in which section the Board has six (6) pieces of property, the Board has been able to dispose of one piece of 90 feet on the corner of Main and Vine streets at a satisfactory price, and in order to provide a home for the tenants we are now engaged in replacing some old and dilapidated buildings at the southwest corner of Main and Market streets, with a fine factory building to cost about $35,000.00, which has been leased for a term of years at a good rental.

We are sorry not to be able to report further sales of residence property, but hope, with the largely increased but unsatisfied demand for houses, to make sales in the early spring.

The city is at present engaged in the building of two large sewers in the neighborhood of the Garden, both badly needed, but which will, unfortunately, make a large

demand upon our revenue, possibly to the amount of $20,000.00.

We are again called upon to mourn the loss of one of our most active and valuable members, Mr. Henry Hitchcock, who died on March 18, 1902.

The following memorial was adopted by the Board and entered upon its records: —

IN MEMORIAM — HENRY HITCHCOCK.

Among the late losses of respected citizens out from her midst which St. Louis has been called on to deplore, the death of Mr. Henry Hitchcock has brought a deep sense of sorrow.

To his fellow members of the Board of Trustees of the Missouri Botanical Garden that sense of loss is gravely intensified by their grateful memories of his assiduous and faithful labors in helping and guiding them in the discharge of the duties and responsibilities laid upon them by the will of the donor of the Garden, and by the confidence reposed in them by the chief beneficiary, the public.

Ever on the alert that the sovereign behests of the Trust, in which he had a share of custodianship, should be loyally obeyed, painstakingly industrious that the method as well as the aims of fiduciary duty should be carefully heeded, holding a chief place and a laboring oar in the hardest worked Committee of the Board, and with legal skill and sound judgment and fearless integrity directing all its counsels and actions, he was to his fellow members as a very tower of strength in their efforts worthily to fulfil their trust.

The Board, therefore, in emphasizing the great loss which the community has sustained in the death of Mr. Hitchcock, and in assuring the afflicted family of its deep sympathy, desires also to record its special sense of its own bereavement. From the beginning of the existence of the Board he was its Vice-president and the Chairman of its most active Committee.

The hearts of all the members are filled equally with sorrow for his death and grateful appreciation of his useful and unselfish life, and of the high and honorable position which his integrity and ability had won for him in the city, in the state and in the nation.

Yet sorrow is overtopped by triumph in the thought of

'Life's work well done,
Life's race well run,
Life's crown well won,
Now comes rest.'

The only permanent improvements made at the Garden during the past year were the erection of a series of

growing houses, some seven in number, costing $7,000.00; but the Garden has received careful attention by a large increase to the collection of plants and shrubs.

The annual bequests provided for by Mr. Shaw in his will have been fully carried out, with the exception of premiums for a flower show (none having been held), at an expense of $2,480.93.

A large number of additions have been made to the library and herbarium during the past year, and the following amounts have been credited to the stock account, which now stands upon our books at $1,612,176.96.

Library	$7,475 76
Herbarium	9,426 60
Growing Houses	7,000 00

Although with the increased expenditure for current Garden account, an excess of $4,000.00 for taxes over the previous year, and the increased cost of insurance and repairs, all of which was paid out of the income for the year, we are able to carry forward a surplus of receipts, over expenses, of $6,339.36.

For additional information concerning the operations at the Garden, you are referred to the Director's annual report.

RECEIPTS.

Rents		$106,632 11
Interest and dividends		3,147 93
Garden pasturage, above expenses		269 54
Garden handbook sales		46 00
Publication sales		6 42
Loss by fire to buildings		739 91
Sales of real estate		1,000 00
Hail insurance loss	121 58	
Street openings	12,468 40	$124,431 89
Cash on hand January 1st, 1902		2,710 61
		$127,142 50

EXPENDITURES.

Garden Account,		
Labor pay-roll	$17,911 41	
Students' pay-roll	1,612 77	
Office assistance	780 00	
Fuel	1,071 04	
Water	417 00	
Repairs and supplies	2,011 31	
Stable and implements	221 45	
Plants and seeds	1,327 66	$25,352 64
Herbarium Account,		
Salaries	455 04	
Fuel	71 94	
Current expenditure	2,488 83	3,015 81
Library Account,		
Salaries	1,353 42	
Fuel	71 96	
Current expenditure	5,170 02	6,595 40
Office Account,		
Salaries	4,591 04	
Fuel	71 95	
Current expenditure	423 68	5,086 67
Research Account,		
Salaries	819 96	
Drawing plates	8 50	
Current expenditure	247 35	1,075 81
Scholarship Account,		
Instruction	663 00	
Care of Lodge	240 00	
Fuel	55 08	
Current expenditure	163 88	1,121 96
Total maintenance expenditure		$42,248 29
Garden Improvement Account,		
Planting North American synopsis	404 07	
Plant houses	94 63	
Growing houses and work yard	7,687 76	8,186 46
Total		$50,434 75
Publication Account,		
Thirteenth annual volume	2,274 78	
Reprints, Volumes III. and VIII.	600 00	2,874 78
Property Expenses,		
State, school, city and sprinkling tax	30,845 23	
Streets, sidewalks and sewers	998 01	
Opening streets	11,942 64	
Insurance	5,784 11	
Repairs	4,490 62	
New improvements	1,337 95	55,398 56
Carried forward		$108,708 09

Brought forward		$108,708 09
Office Expenses,		
Salaries	4,080 00	
Office rent	870 00	
Printing, postage, telephone and advertising	646 62	5,596 62
Bequests,		
Flower Sermon	200 00	
Trustees' Banquet	892 00	
Gardeners' Banquet	361 30	
Washington University, School of Botany .	1,027 63	2,480 93
Sundries,		
Legal expenses	192 75	
Repairs to buildings damaged by fire . . .	738 41	
Damage by hail to plant houses	135 54	
New buildings	1,950 00	
Commission	91 50	3,108 20
Total expenditure		$119,893 84
Cash on hand December 31, 1902		7,248 66
		$127,142 50

Respectfully submitted,

R. J. LACKLAND, President.

Attest:

A. D. CUNNINGHAM, Secretary.

FOURTEENTH ANNUAL REPORT OF THE DIRECTOR.

SUBMITTED TO THE TRUSTEES JANUARY 14, 1903.

To the Board of Trustees of the Missouri Botanical Garden:

The following report on the Missouri Botanical Garden and the Henry Shaw School of Botany, therewith connected, is respectfully submitted in compliance with the rules of the Board.

THE BOTANICAL GARDEN.

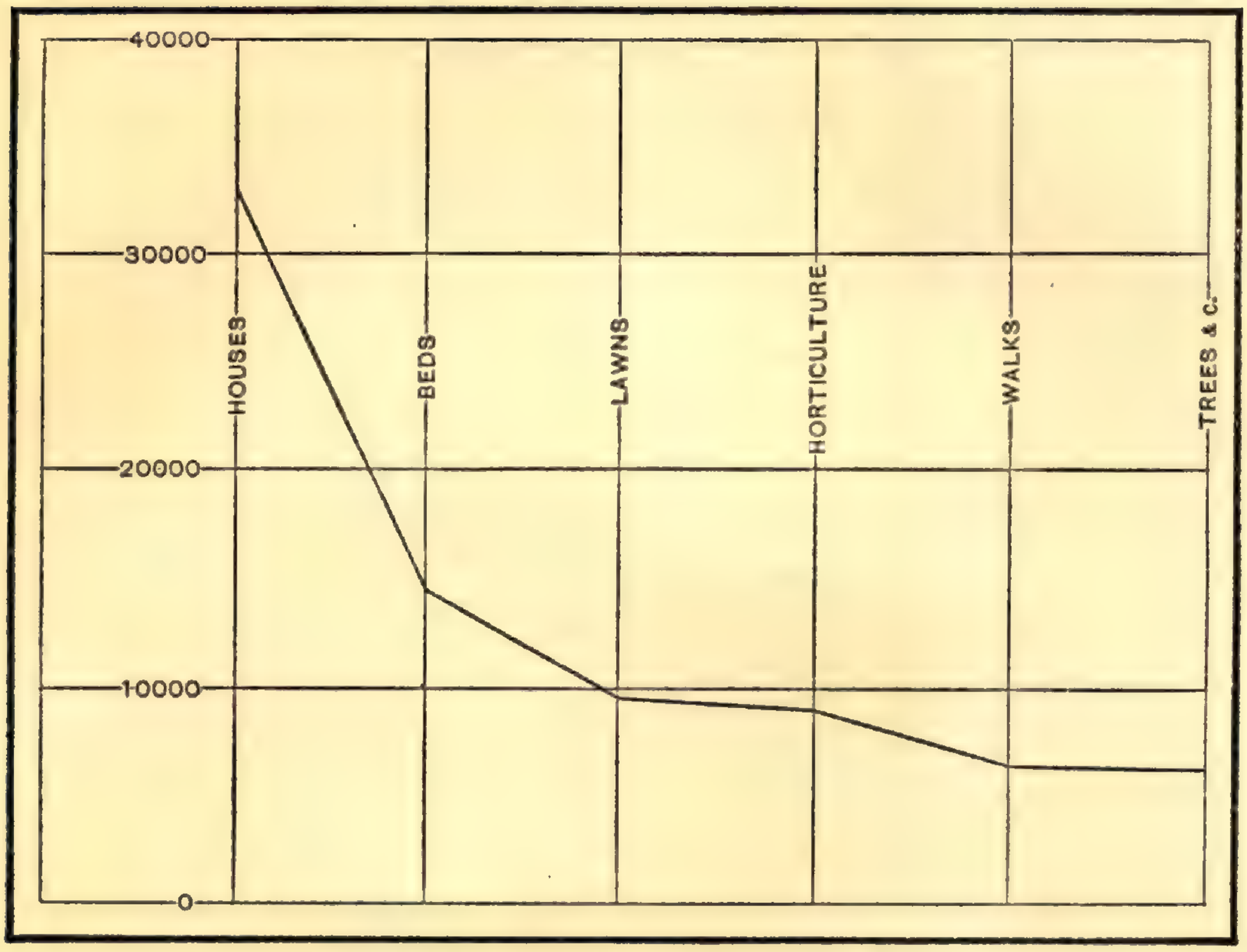
The general maintenance of the Garden during 1902 has not differed in essentials from what has been reported for preceding years. Perhaps the most marked change was at the main entrance, where the provision of climbers on the inner face of the gate house and the growth of a heavy mass of *Acalypha tricolor* flanking the entrance walk produced an impression quite different from that effected by the use of succulents about the gate house for a number of years.

In contrast with the preceding summer, that of 1902 was relatively cool and moist, so that although some of the plants set in the autumn and a number of the trees enfeebled by the drought and heat of 1901 died, the general operations of gardening were satisfactorily and effectively carried on.

The apportionment of labor in the different departments of gardening is clearly shown on the accompanying diagram (A), compiled from a tabulation which is made at the end of each month from the daily reports of the gardeners. The care of the decorative collections sheltered in greenhouses requires almost one-half of the entire labor annually expended on gardening, the flower beds and ponds — which receive little attention in winter — requiring not far from one-sixth of the total, lawns and horticulture — the latter

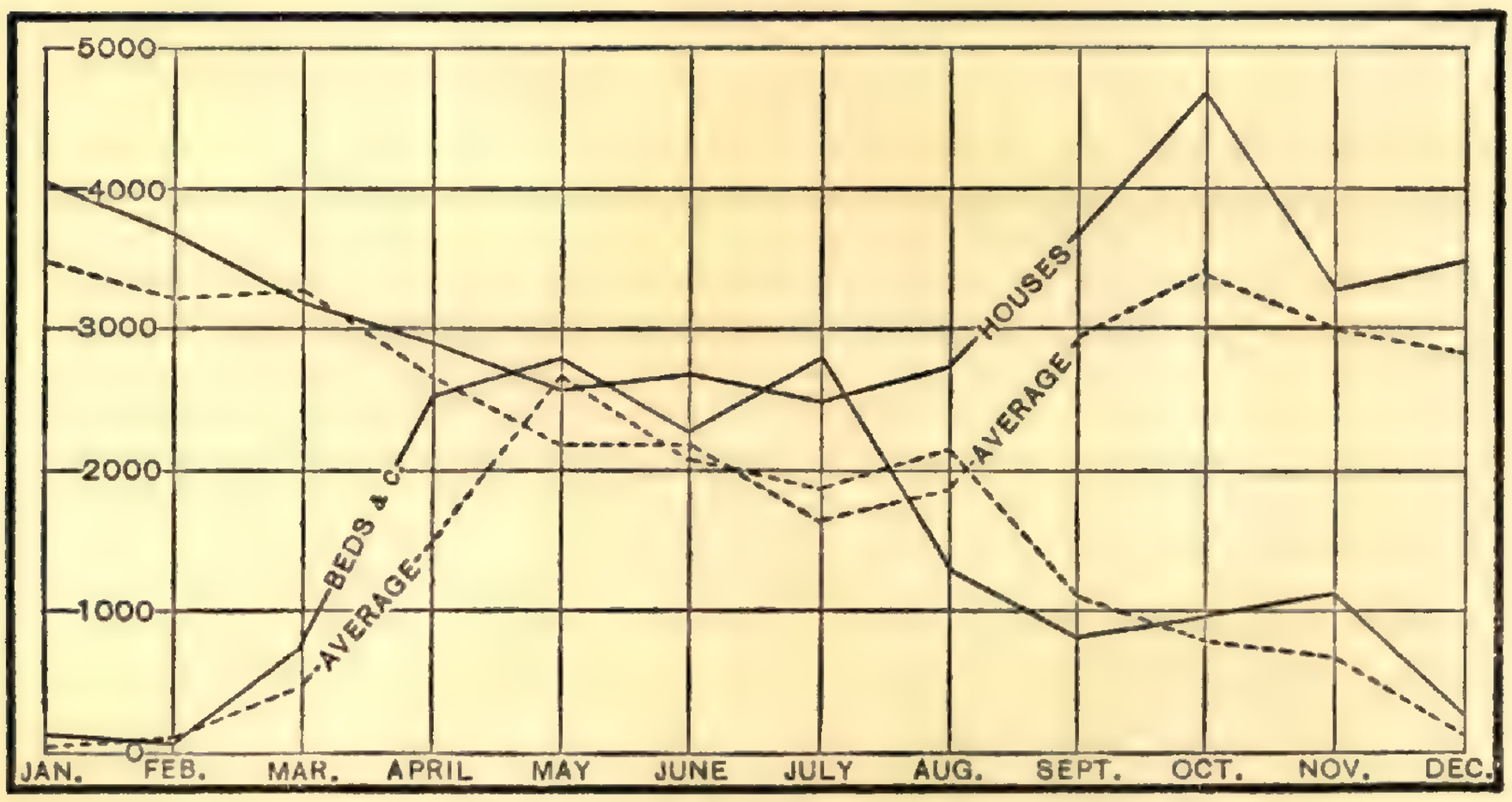
SOTOL — DASYLIRION SERRATIFOLIUM.

DIAGRAM A.



HOURS OF GARDENING LABOR, 1902.

DIAGRAM B.



LABOR ON HOUSES AND BEDS — BY MONTHS.

including work in the vegetable house — somewhat more than one-eighth each, and the walks and the collections of woody plants a little over one-twelfth each. The seasonal distribution of hours of labor respectively on plant houses and frames, and on beds, ponds and rockeries, for 1902, with corresponding averages for the preceding five years, is graphically presented in diagram B.

The border of trees and shrubbery of the recently graded tract at the southern end of the Garden again suffered to an unexpected degree last winter, but the lost trees have been replaced, and it is hoped that in the coming season the planting of the North American synopsis may be completed in large part in this tract. Though gravel walks will ultimately be carried through this addition to the grounds, it is the intention for the present to maintain in it turf walks only, and a fairly good bluegrass sod has already been established on much of the tract.

Toward the end of last winter a fire originated in one of the temporary flue-heated plant-houses, damaging the house and destroying or injuring its contents, and in the early autumn, glass, somewhat in excess of 1,100 square feet in area, was broken by hail. The loss in both cases was fortunately light.

Among the additions and improvements made during the season should be noted the provision of a series of plant-houses of modern design and good construction, for the growth of plants needed for display in the houses which are open to the public, — the results of which are already very noticeable in the latter, — and for the propagation of bedding plants.

During the year, 128 species or varieties of plants were dropped from cultivation, and 1,712 were added, making a net gain of 1,584 for the year,* the total number recorded

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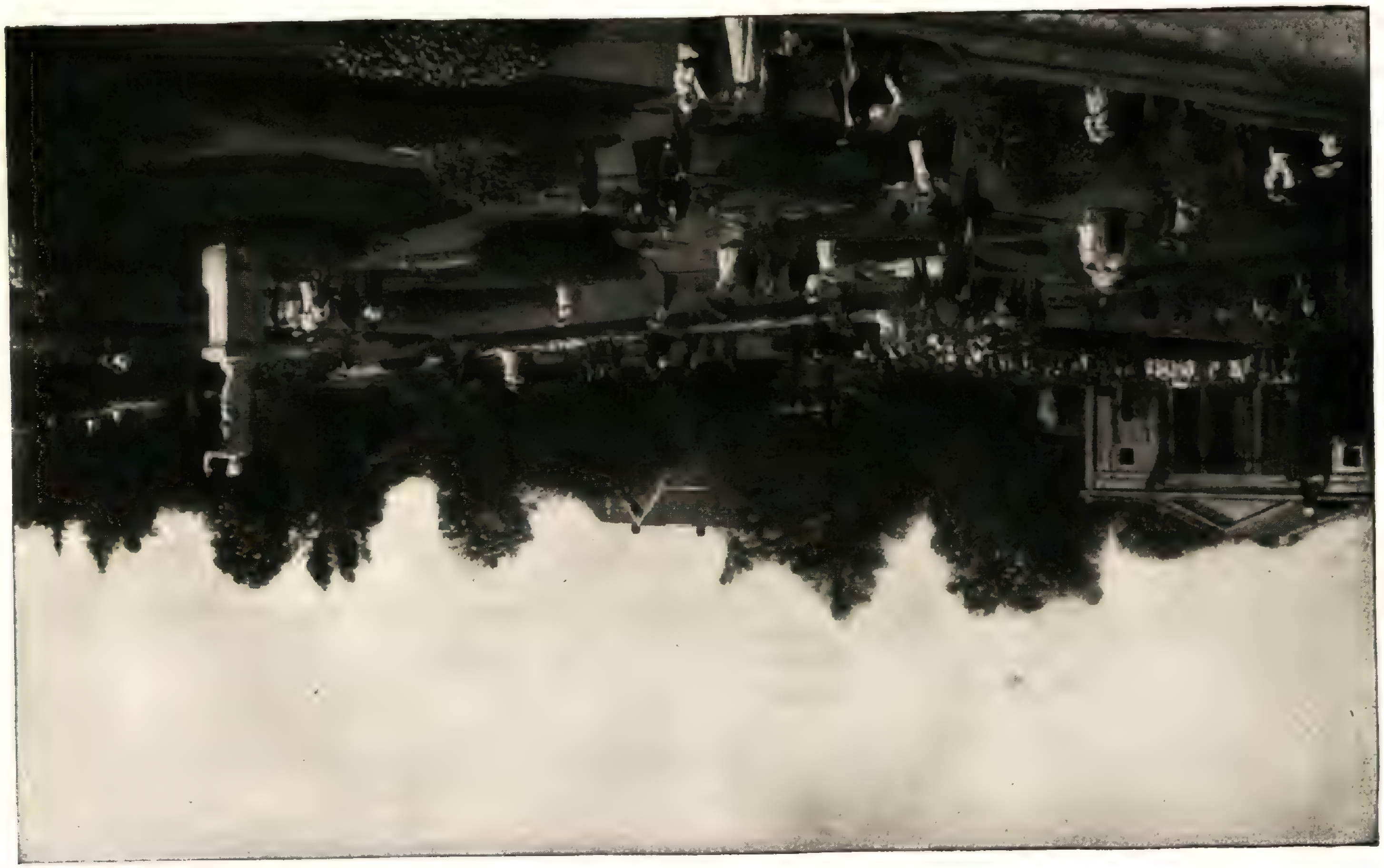
* See Rept. Mo. Bot. Gard. **13**: 18.

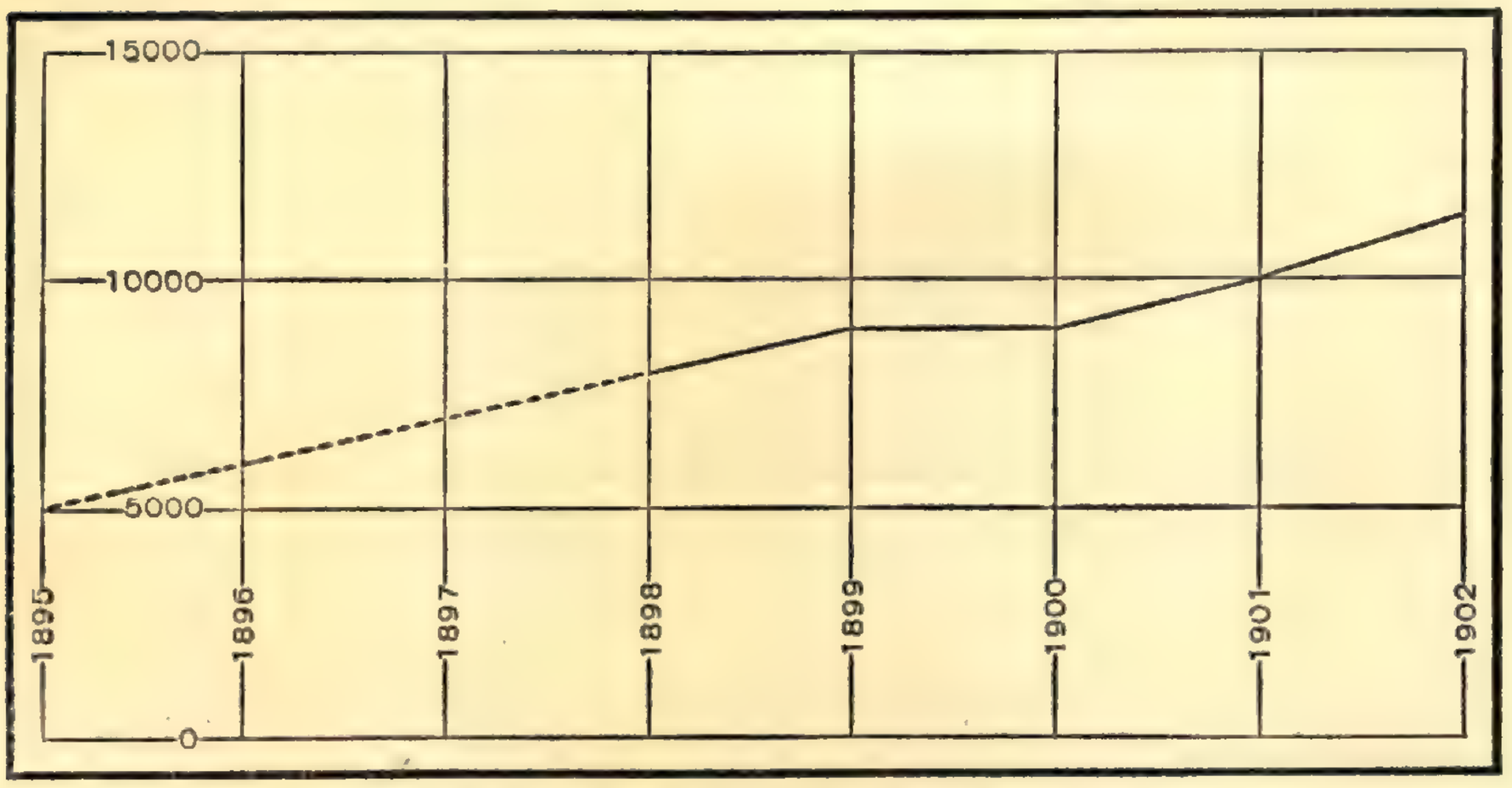
SUNDAY VISITORS.



as cultivated now being 11,551. The yearly increase in the variety of plants cultivated is shown by the appended diagram (C). An estimate, only, was made prior to 1898, since which records have been kept.

The policy of giving surplus plants to hospitals, schools, etc., has been continued, and 2,020 plants were distributed in this manner in 1902. In addition to this, 392 plants,

DIAGRAM C.

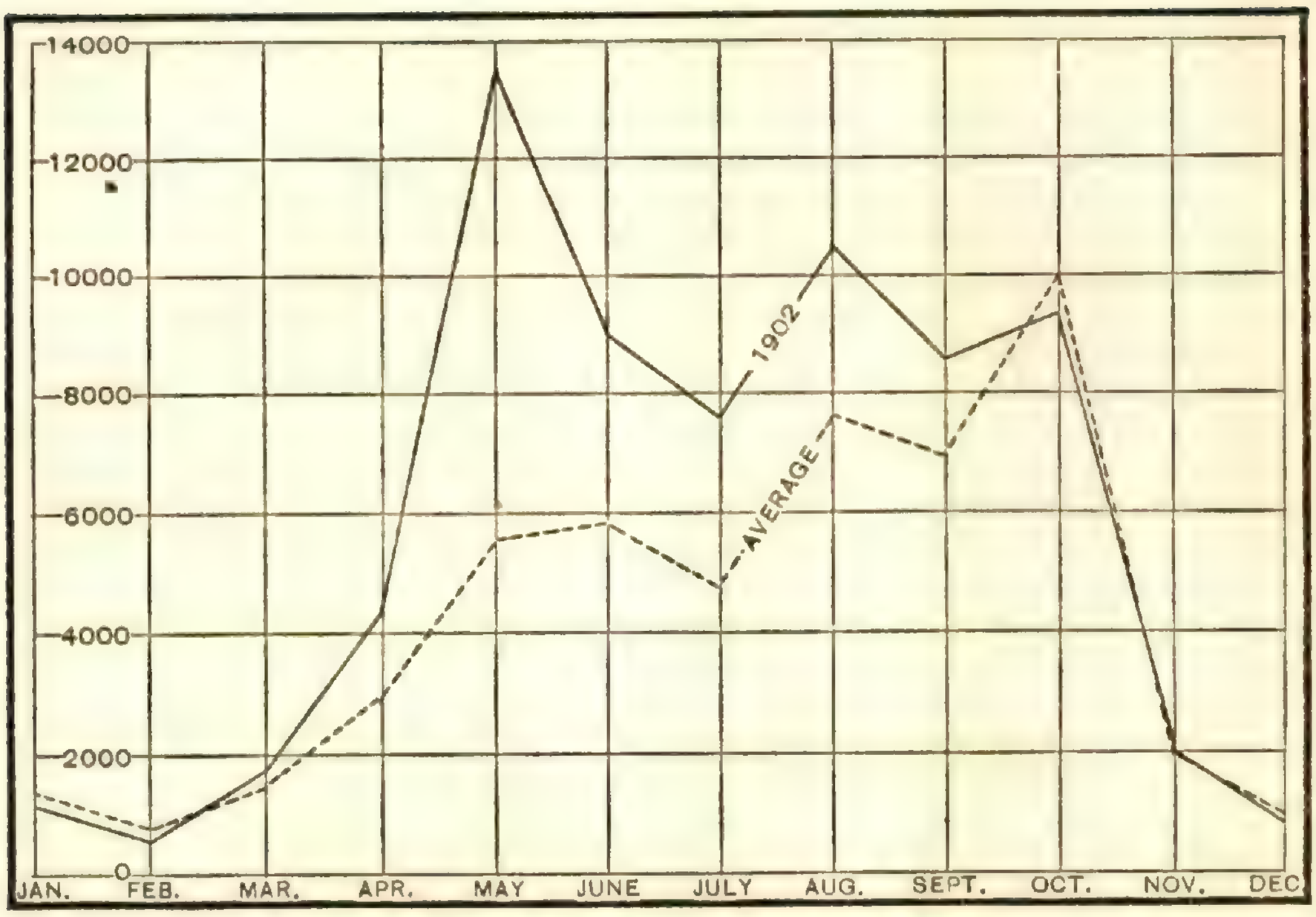


SPECIES AND VARIETIES CULTIVATED.

cuttings, or packets of seeds, valued at $64.95, were sent to correspondents of the Garden. In exchange for this material and the publications of the Garden, or as gifts, 11,613 plants or packets of seeds, valued at $867.07, were received. The employees of the establishment propagated 13,286 plants, valued at $930.02, and collected 311 plants or packets of seeds, valued at $36.31; and 7,737 plants or packets of seeds were bought, the expenditure for these, as shown by the Secretary's books, amounting to $1,327.66.

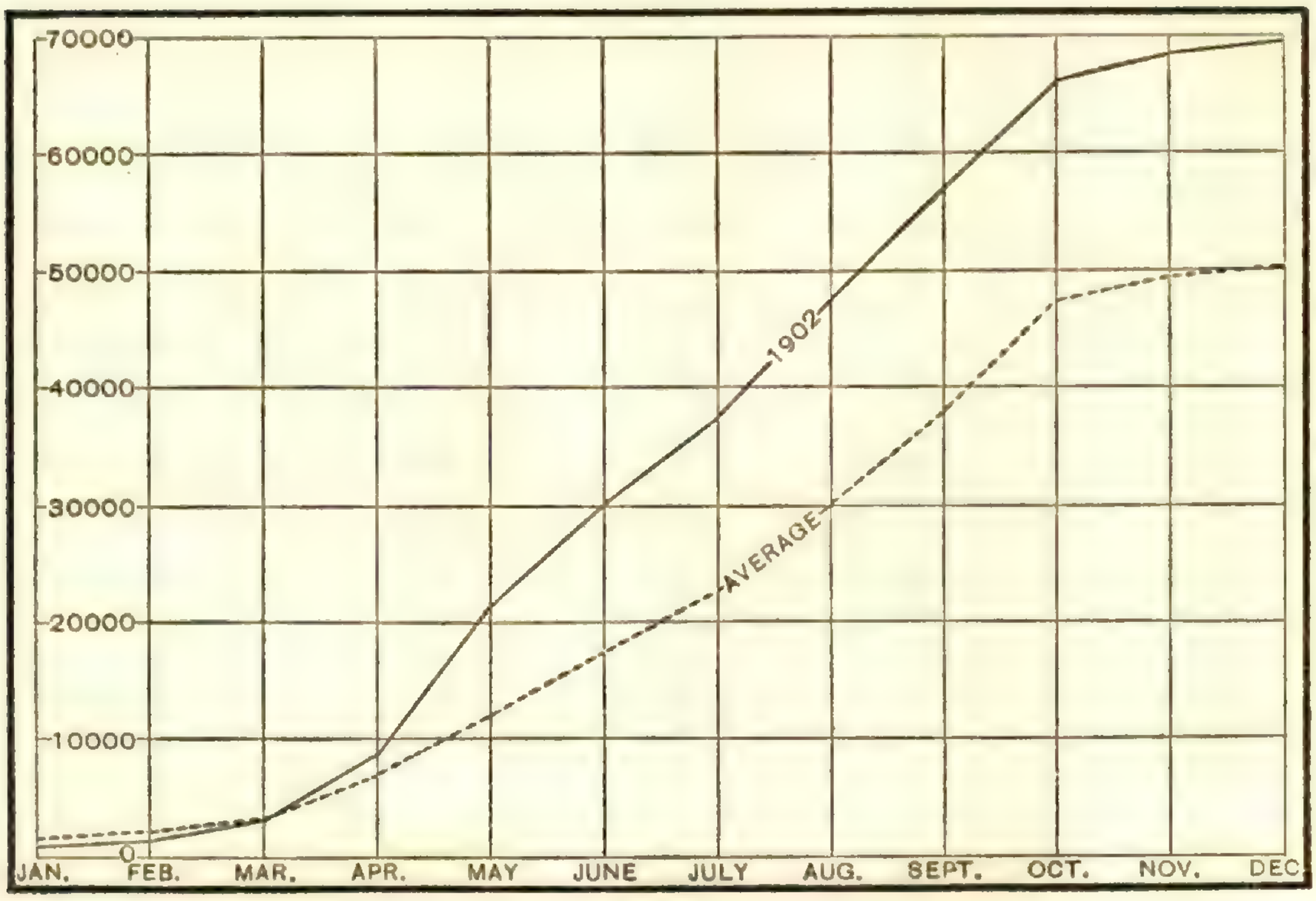
The number of visitors in 1902 was 21,052 greater than in the highest previous year (1901) for which records have been kept, reaching a total of 112,314, of which number 20,550 were recorded for the open Sunday after-

DIAGRAM D.



VISITORS ON WEEK DAYS — BY MONTHS.

DIAGRAM E.



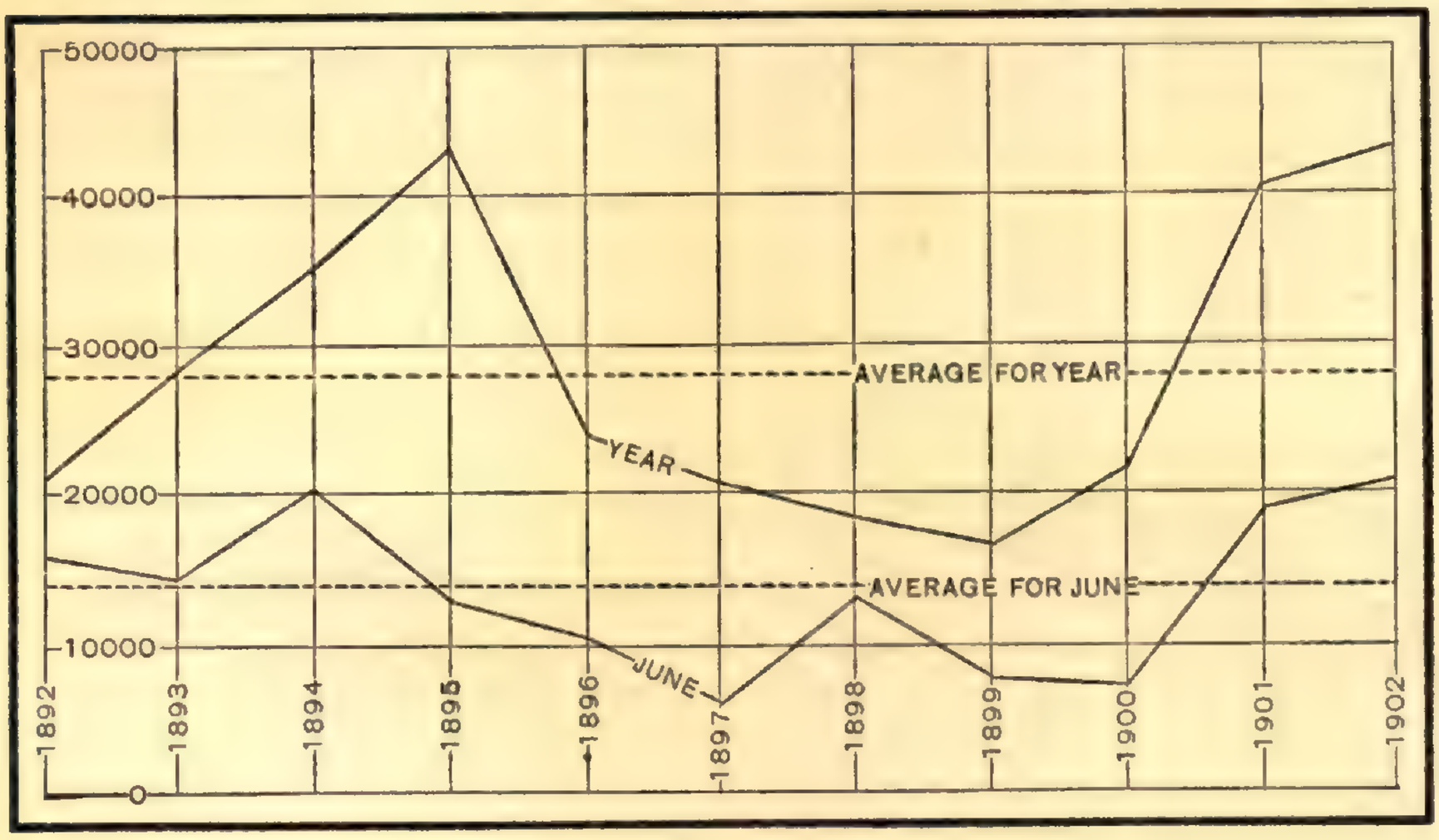
VISITORS ON WEEK DAYS — CUMULATIVE.

FLOWERING AGAVE—A. TONELIANA.

noon in June, and 22,667 for the open Sunday afternoon in September, — both surpassing earlier records for the corresponding days. The distribution of week day visitors through the year is shown by the full line on the appended diagrams (D, E.), in comparison with which the average for the preceding years covered by records is indicated by a dotted line. The striking rise in the curve in May is due to the fact that an Agave (*A. Toneliana*) which flowered at that time was taken notice of by the daily papers, so that more than the usual interest in the Garden was awakened, and this interest evidently persisted through several ensuing months.

The comparison of the number of Sunday visitors in 1902 with the average for earlier years is facilitated by the diagram F.

DIAGRAM F.



SUNDAY VISITORS.

The herbarium has received more than the customary attention during the year just closed. Most of the current collections of American plants and some foreign sets have been purchased, and the Garden was fortunate enough

to secure the herbarium of Professor G. C. Broadhead, valuable as verifying the occurrence in Missouri of plants referred to in the early geological reports on the State. Though large additions to the mounted material have been reported each year, the herbarium has been increasing far more rapidly than the material could be mounted and incorporated. Extra help has been employed through nearly the whole of 1902, in which 62,844 sheets of specimens were incorporated, leaving a greatly reduced quantity of unmounted material at the close of the year. Of the incorporated sheets, 15,551, valued at $757.55, were presented or received in exchange for material or publications, 469 were collected by employees of the Garden, and 47,224 were bought. The expenditure on the herbarium for the year amounts to $3,015.81. A single duplicate sheet only was withdrawn, but a considerable amount of fragmentary material of no nominal value was sent to correspondents for research purposes.

The herbarium, so far as now mounted, consists of: —

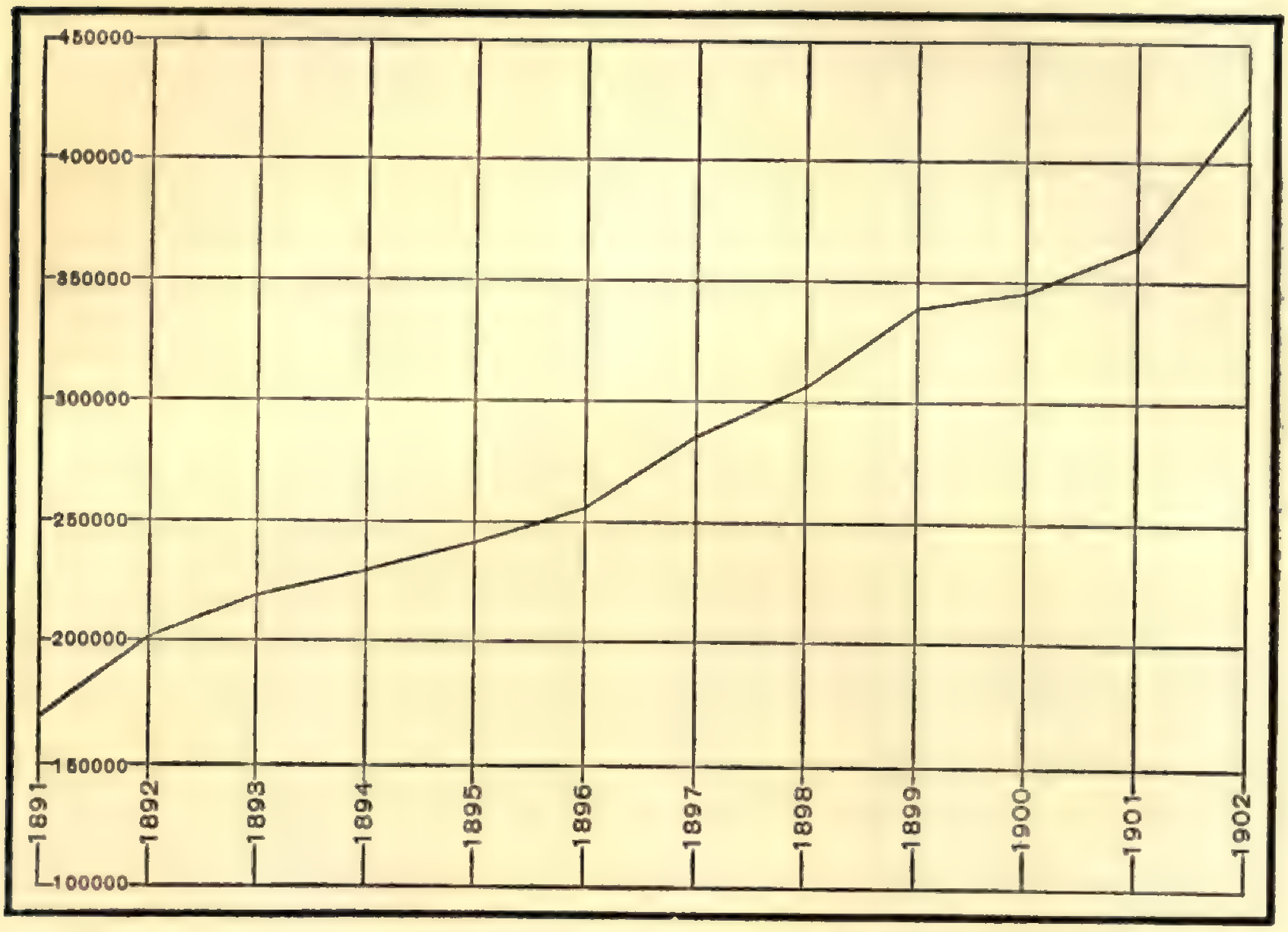
The Engelmann Herbarium (all groups) about . . .		97,800	specimens.
The General Herbarium: —			
Higher plants.			
The J. J. Bernhardi Herbarium	61,121		
The J. H. Redfield Herbarium .	16,447		
The Sturtevant and Smith Herbarium	7,446		
The Gustav Jermy Herbarium .	4,172		
Other specimens	209,122	298,308	"
Thallophytes.			
The J. J. Bernhardi Herbarium*	126		
The Gustav Jermy Herbarium .	1,659		
Other specimens.	29,904	31,689	"
Making a total of		427,797	"
Valued at		$64,169	55†

* So far as yet incorporated.

† This valuation, at the rate of $15.00 per hundred mounted sheets.

The yearly growth of the mounted herbarium is shown in the diagram G.

DIAGRAM G.



SPECIMENS IN HERBARIUM.

The following, practically a part of the herbarium, remains unchanged: —

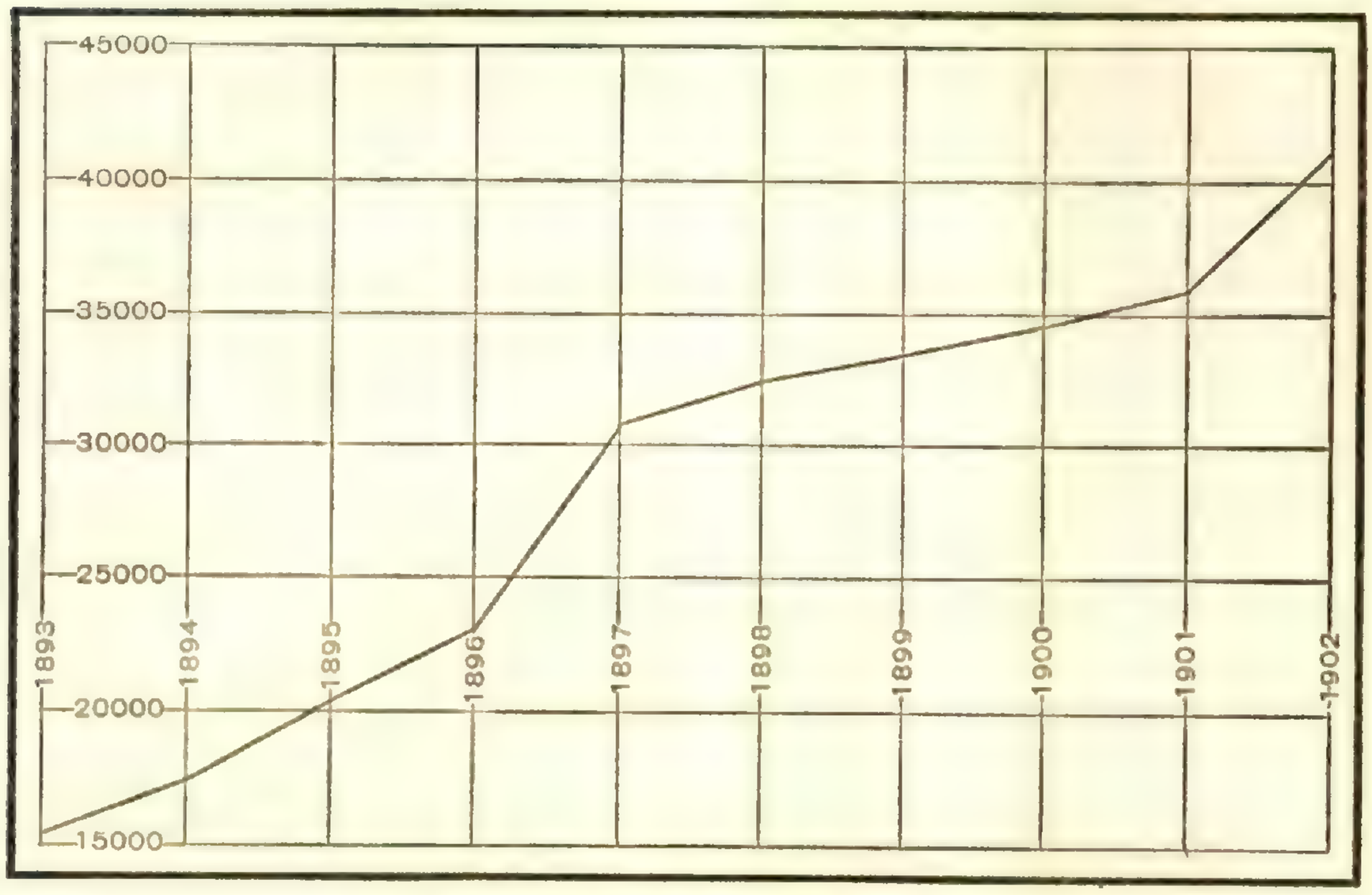
Wood specimens of various sizes	1,027,	valued at	$100 00
Wood veneers by Hough and others	2,279	"	160 00
Microscope slides by Penhallow and others . .	1,051	"	250 00
Together	4,357	"	$510 00

The library has been increased by the addition of 1,524 books and 697 pamphlets, purchased, and 992 books and 1,995 pamphlets, valued at $2,058.89, presented or received by way of exchange. The expenditure for books, binding and pamphlet covers amounted to $5,142.16. Among the notable additions to the library should be mentioned an extensive collection of books published prior to the time of Linnaeus, and therefore complementary to the pre-Linnean library presented by Dr. Sturtevant in 1892.*

* Rept. Mo. Bot. Gard. 4:14. 8:21.

The yearly increase in the number of books and pamphlets in the library is shown on the diagram H.

DIAGRAM H.



BOOKS AND PAMPHLETS.

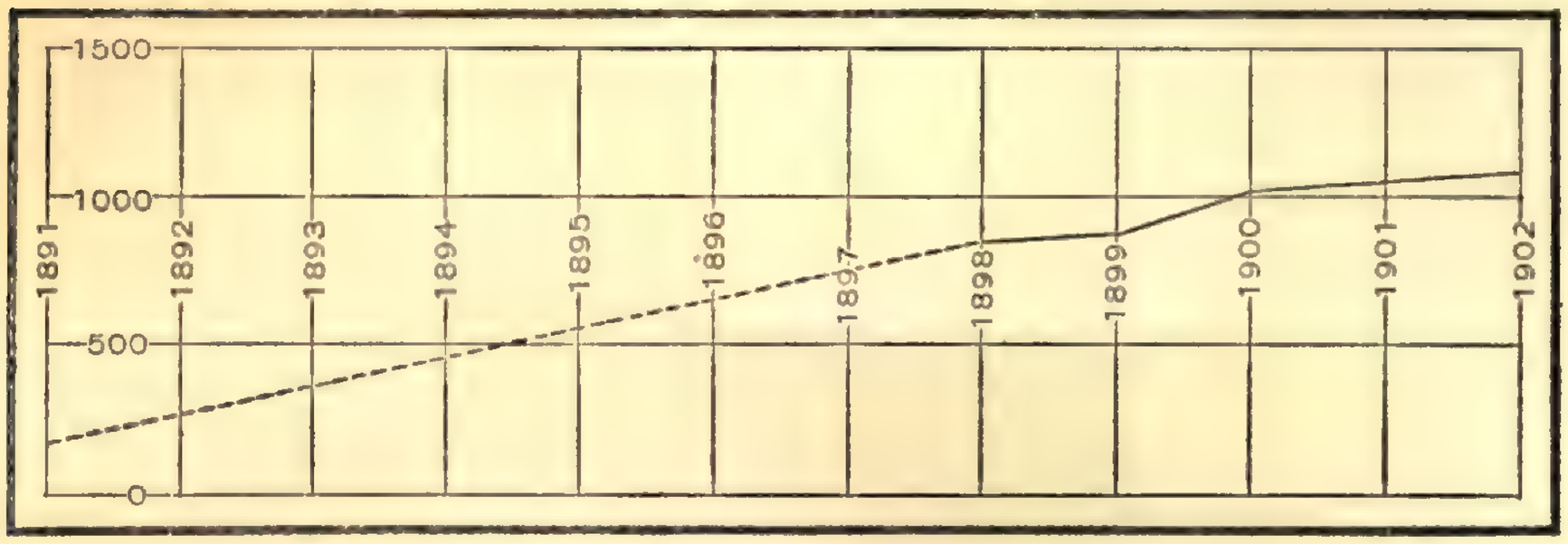
The card index was increased by the addition of 27,471 new cards, of which 2,724 were bought, at a cost of $27.86, 3,768 were presented, and 20,979 were written by employees.

As now constituted, the library contains: —

Pamphlets	22,608		
Books	18,550		
	41,158	valued at	$66,706 30
Manuscript volumes	66	" "	800 00
Total	41,224	" "	$67,506 30
Index cards	302,955	" "	3,029 55
Total valuation of library			$70,535 85

The current list of serial publications received includes 1,160 titles, of which 92 represent purchases, and 1,068, issued by 817 institutions or publishers, exchanges. The yearly increase in exchange publications received at the Garden is shown by the diagram I.

DIAGRAM I.



PUBLICATIONS RECEIVED BY EXCHANGE.

During the year, 183 copies of the little handbook were sold, and a considerable number were given away, principally to representatives of the press, entertained in St. Louis by the World's Fair management.

The third and eighth volumes of the Garden Reports, the edition of which had become exhausted, have been reprinted from the original electrotypes, 500 copies of each being secured.

The following changes in the personnel of the office have been made in 1902: Mrs. A. E. Ford was appointed stenographer in place of Mr. C. E. Hutchings, who had filled that position for a long period of years, and Miss Eva Perles was appointed as an assistant in the library. Too much cannot be said in commendation of the efficiency of Mr. Irish, under whose immediate care the new plant-houses were built, on plans designed in detail by him, and of Mr. Harris, to whose energy the clearing up of accumulated material in the herbarium was chiefly due.

As has long been the policy of the Garden, research

work has been carried on by all of the higher office employees, each of whom has been permitted to devote a regular, if not large, part of his time to investigation. Some of the results of this study have been published already, and others, particularly a revision of the varieties of peaches cultivated in the United States, by Mr. Irish, will be printed in the near future. For the completion of my own paper on Yuccas and related plants, published in the thirteenth Garden Report, two rapid field trips were undertaken in the early part of the year, covering parts of Guatemala, Honduras, Mexico, and the southwestern United States.

Visiting botanists and scientific correspondents have been given every possible aid in their studies, and a number of candidates for advanced degrees in Washington University have been occupied in resident work at the Garden. The investigation of the diseases of plants and the decay of timber, by Dr. von Schrenk of the School of Botany and his assistants, has been continued for the United States Department of Agriculture through the year, and a portion of the old museum building has been adapted to office and laboratory use in the prosecution of this work.

One garden pupil, Rudolph J. Mohr, who had completed the prescribed course of study and was recommended as practically proficient by the Head Gardener, was admitted to examination and granted the prescribed certificate in April, and the scholarship vacated by him was awarded to William Polst, of St. Louis, on nomination of the St. Louis Florists' Club. One paying pupil, Miss Herta A. Toeppen, has taken the regular gardening course through the year, in addition to the six pupils holding scholarships.

Three annual events, provided for in the will of the founder of the Garden, have taken place, as follows: —

The annual flower sermon was preached in Christ Church Cathedral, St. Louis, on the morning of May 18, by the Right Reverend George H. Kinsolving, Bishop of Texas.

The banquet to the Trustees of the Garden, and their guests, was given at the Southern Hotel, on the evening of May 17th. Bishop Tuttle, of the Board of Trustees, presided. Covers were laid for 99 persons, among whom were the Trustees of the Garden, representative citizens of St. Louis, and a number of prominent educators and investigators from a distance. Speeches appropriate to the occasion were made by Dr. E. A. Birge, Acting President of the University of Wisconsin, Professor J. A. Holmes, State Geologist of North Carolina, and Messrs. Smith P. Galt and W. M. Reedy, of St. Louis.

The thirteenth banquet to the gardeners of the institution and invited florists, etc., was given on the evening of November 19th, at the Mercantile Club. In the absence of the Director, who was unable to be present, Mr. H. C. Irish, his Horticultural Assistant, presided. One hundred and ten persons were present, including, in addition to the gardeners and office staff, a number of representative florists, nurserymen, market gardeners and amateurs, as well as a large number of the gentlemen in attendance at the American Apple Growers' Congress, then in session at St. Louis. Dr. John Green, of the Board of Trustees of the Garden, officiated as toast-master and the following toasts were proposed: The American Apple Growers' Congress, response by Mr. Charles H. Williamson, of Quincy, Ills.; The Garden Pupils, response by Professor A. T. Erwin, of Ames, Ia.; Professional Men as Orchardists, response by Mr. Albert Blair, of St. Louis; The Plant Pathologist, response by Dr. H. von Schrenk, of St. Louis; The St. Louis Florists' Club, response by President J. W. Dunford, Jr.; The American Pomological Society, response by President C. L. Watrous; Our Forests, response by Dr. Tarleton H. Bean, of the World's Fair; Horticulture at the Exposition, response by Mr. F. W. Taylor, of the World's Fair; Henry Shaw, response by Mr. F. N. Judson, of St. Louis.

It may be worthy of mention, as showing the influence of these gatherings, that, partly as a result of the discussion at the preceding banquet,* much interest has been awakened in the beautification of St. Louis homes by the use of growing plants, a matter energetically taken up by the Engelmann Botanical Club and indorsed by the subsequently organized Civic Improvement League. As a result of these efforts, over 70,000 packets of flower seeds were sown by school children alone last year, and there is reason to believe that the activity of both children and parents will be increased the coming season.

The provision in Mr. Shaw's will for the award of premiums or prizes at a flower show when held in St. Louis, was not taken advantage of in 1902, for the only time since the first flower show was held, no flower show being held in the city last year.

THE SCHOOL OF BOTANY.

The staff of the School of Botany remains unchanged since my last report.

With the purpose of better adapting the work of the department to the general needs of the University, the series of electives in botany offered to undergraduates† was considerably shortened and simplified in the spring, the courses as now offered being as follows:—

1, 2. Elementary Morphology and Organography. — Laboratory work, with supplementary lectures and quizzes, dealing with the form and structure of plants with special reference to their life processes, and to systematic botany.

3, 4. Cytological Technique. — Laboratory work in the cultivation and examination of bacteria and the methods of histological investigation, combined with a study of the principal types of plant anatomy, — specially adapted to the needs of students intending to study medicine.

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* Rept. Mo. Bot. Gard. **13**: 25.

† Rept. Mo. Bot. Gard. **12**: 19.

SPECIMEN PALM — LICUALA GRANDIS.

5, 6. Vegetable Physiology. — Laboratory work, with supplementary lectures.

7, 8. Systematic Botany. — Laboratory and field work, with supplementary lectures, dealing with the comparative structure and the classification of plants.

9, 10. Plant Pathology and Applied Mycology. — Laboratory work.

The first two of these courses, for beginners, are intended, as nearly as may be, to furnish an equivalent of the desired standard option in botany for admittance to colleges; the third and fourth are rather in technique than botany proper; and the remaining six are for students who have had preliminary training. In addition to these stated electives, suitable advanced work is offered for undergraduates or graduates prepared to undertake it, and one candidate for the Master's degree, and four candidates for the Doctor's degree, in botany, are now enrolled in Washington University.

Very respectfully,

WILLIAM TRELEASE,
Director.

SCIENTIFIC PAPERS.

SYNOPSIS OF THE GENUS LONICERA.

BY ALFRED REHDER.

INTRODUCTION.

The last general review of the genus *Lonicera* was published more than seventy years ago by A. P. De Candolle in the fourth volume of his Prodromus, where 53 species are enumerated of which, however, one is inserted twice, one does not belong to the genus and nine are now referred to other species as varieties or synonyms. This leaves only 42 recognized species. Since that time this number has more than tripled, chiefly from discoveries made in central and eastern Asia, so that now there are known more than 150 well distinguished species.

As the literature and references to these species are widely scattered through numerous books and periodicals, it is at present rather difficult to properly place and determine unknown species, particularly those of Asiatic origin, though the difficulty is somewhat relieved by more or less comprehensive accounts of the species of certain regions, as given by Maximowicz, Regel, Clarke, Franchet, Gray, Wolf, and by systematic enumerations of the cultivated species published by Koch, Dippel and Koehne.

In looking over the literature of the genus one cannot help noticing the great diversity of opinion exhibited by the different writers as regards the limitation of the divisions and subdivisions of the genus. This is not because the distinctive characters are obscure and slight; on the contrary, there is a great variety of obvious characters,

but they are promiscuous and of very different systematic value and the grouping will vary according to the characters to which preference is given. Unfortunately most authors have seized upon characters of secondary value and therefore their arrangement has not expressed the natural affinities of the species to any great extent. Most of the older herbalists, as Brunfels, Fuchs, Gesner, Dodonaeus and Bauhin, distinguished two genera, *Periclymenum* or *Caprifolium* and *Xylosteum* or *Chamaecerasus;* only few, as Gerard and Clusius, recognized a single genus, under the name *Periclymenum*, which is the oldest name for the genus though it is not quite clear whether Dioscorides, who used it first, intended it for a species of *Lonicera*. Tournefort in 1700 distinguished four genera, *Caprifolium*, *Periclymenum*, *Xylosteum* and *Chamaecerasus*, which were united by Linné under *Caprifolium* in his Systema Plantarum (1735), but in his Genera Plantarum (1737) and Species Plantarum (1753) he substituted the name *Lonicera* for *Caprifolium* and added other genera and species afterwards again removed from this genus. Few botanists, however, followed Linné and most divided the genus into at least two genera, one containing the climbing, the other the upright species, and it was not until the appearance of De Candolle's Prodromus that Linné's conception of the genus was generally accepted. Miller (1754) called the genera *Periclymenum* and *Xylosteum*, but changed the latter name in 1759 to *Lonicera*. Delarbre (1800) named them *Caprifolium* and *Chamaecerasus;* Humboldt, Bonpland & Kunth (1818) *Caprifolium* and *Xylosteum;* Roemer & Schultes (1819) *Caprifolium* and *Lonicera;* and Torrey (1825) *Lonicera* and *Xylosteum*. Another division into two genera was essayed by Necker (1790), who separated the species with almost regular limb of the corolla from *Lonicera* as *Cobaea*. Three genera were established by Adanson, who distinguished the species

with connate ovaries as *Isika* and called the other two genera *Xylosteum* and *Caprifolium*, while Borkhausen and Roehling, who took up his *Isika*, called them *Lonicera* and *Caprifolium*. A different division into three genera was made by Sweet (1830), who separated the climbing species with flowers in pairs from *Lonicera* and *Caprifolium* as *Nintooa*. Webb (1838) adopted *Nintooa*, but substituted *Xylosteum* for *Lonicera* and *Lonicera* for *Caprifolium*. The four genera of Tournefort were accepted by Medicus (1789), but for *Xylosteum* he substituted the name *Isika*. Rafinesque at first (1820) also recognized all the Tournefortian genera, but changed *Periclymenum* to *Periclyma* and *Chamaecerasus* to *Chamerasia;* and on *Lonicera sempervirens* as the type, he founded a new genus, *Phenianthus*, probably not realizing that Tournefort's *Periclymenum* is based on the same species. In his New Sylva (1836) he had changed his view, using *Lonicera* for the climbing, and *Xylosteum* for the upright honeysuckles, and he founds on *L. involucrata* the genus *Distegia*, a genus which has not been recognized by any botanist except recently by Greene. The only other botanist who took up the Tournefortian genera was Spach (1839), who distinguished *Xylosteum*, *Lonicera* (*Chamaecerasus* Tourn.), *Caprifolium* and *Periclymenum*, referring *Nintooa* to *Caprifolium* as a section.

Most botanists, however, especially after the first quarter of the last century, accepted the genus *Lonicera* in the Linnean sense with some emendations. The emended genus is usually ascribed to Desfontaines, Flora Atlantica (1798). There seems, however, no reason for this, since he says nothing to indicate that he deviates from the Linnean conception of the genus except that the two species he describes happen to belong to *Lonicera* proper; but for this same reason the emended genus could be credited as well to Hudson, Scopoli or Loureiro. The first place where the genus appears in the now accepted concep-

tion is in Willdenow's Enumeratio Plantarum Horti Berolinensis (1809).

The subdivision of the genus as proposed by Linné into Periclymena and Chamaecerasa (misspelled in the first edition of Species Plantarum "Chamaecerosa") has always remained the principal subdivision, though usually with the names changed according to De Candolle (1805) into Caprifolium and Xylosteum. In his Prodromus (1830), De Candolle subdivided the subgenus Xylosteum further into Isika, Cuphantha, Chamaecerasus and Nintooa. He included Nintooa in Xylosteum, while other botanists, as Rafinesque (1836), Maximowicz (1877) and Clarke (1882), refer it less happily to Caprifolium to which it is similar in habit and partly in the shape of the corolla, but not closely allied. By Rafinesque, Nintooa is called Eunemium, and Periclymenum (Tourn.) Kantemon: he apparently had forgotten that he had named the same group sixteen years earlier Phenianthus. For the American species of Caprifolium he proposes a new section Cypheola, which is identical with the later Caprifolium § Loniceroides of Spach (1839). Another new section was based on *L. Iberica* by Jaubert & Spach (1847) and named Chlamydocarpus. Hooker f. & Thomson (1858) separated as Bracteatae the *Lonicera hispida* and allied species; and Maximowicz (1877) formed of the red-flowered species of the section Chamaecerasus the group Rhodanthae. The latest addition to the sections is Vesicaria of Komarov (1900) founded upon *L. vesicaria* and *L. Ferdinandi*. Quite recently the unnamed sections proposed by Koehne (1893) have been adopted with slight changes and named by Zabel (1903). Of these only the sections Ochranthae, Subsessiliflorae and Ebracteolatae can be considered new. The first is substantially the same as Maximowicz's unnamed second section of his Chamaecerasus, but the other two seem too heterogeneous to be maintained.

There can be little difference of opinion about the

division of the genus into the two subgenera, Periclymenum and Chamaecerasus, or as they are usually called, Caprifolium and Xylosteum, which form two very well defined and natural groups if based on the character of the inflorescence and not on the habit.

The subgenus Periclymenum, which is comparatively small and homogeneous, can be divided easily into closely related subsections; but the much larger subgenus Chamaecerasus has been subdivided in various and mostly not very satisfactory ways. Most botanists take the shape of the corolla, — whether the limb is two-lipped or almost regular, — as the best character for the subdivision, but this difference can scarcely be used to characterize even subsections, since it would separate in several cases very closely related species, while in other cases the shape of the limb is intermediate. It is a character of but secondary value, as it has been probably acquired late in the genesis of the genus by part of the species of several already well differentiated groups as an adaptation to certain insect visitors; it therefore would furnish a very artificial subdivision without any concomitant characters. There is, however, a group of Loniceras with really actinomorphous flowers, hitherto confounded with the pseudo-actinomorphous species. Only Klotzsch seems to have noticed this fact, as appears from a note by A. Garcke in Reise des Prinzen Waldemar (1862), p. 86: "Ausser diesen befindet sich in der Sammlung noch eine, wie es scheint, von *L. Myrtillus* nicht verschiedene Art, die Dr. Klotzsch neu benannt and worauf er eine neue Gattung gründete, deren Namen ich zur Vermeidung unnützer Synonyme mit Stillschweigen übergehe."

The actinomorphous character of the species of Isoxylosteum, as I propose to call this section, is not only shown by the limb, but much more markedly by the presence of five nectaries, while all the other species have only one to three nectaries at the base of the corolla below the lower lip, usually placed

in a more or less pronounced depression forming outwards a gibbosity of the tube. Besides this character there is a difference in the vernation of the foliage, the leaves being flat or carinate, while in all other species I have found them convolute in bud or occasionally involute, and a further difference is the absence of the superposed accessory buds so common in most other species. The remaining species of the subgenus Chamaecerasus can be easily divided into further sections by the pith of the branches, which is either well developed or evanescent: in the first case the branches are solid, in the second they are hollow. This behavior of the pith is a concomitant of a difference in the union of the bractlets. In the solid-branched species there is a tendency of the bractlets of one flower to unite more or less with the bractlets of the second flower of the same pair or to form altogether a complete cupula, and at the same time there is a tendency of the ovaries to unite, while in the hollow-branched species only the bractlets of the same flower unite, or all are free, as are the ovaries. The hollow-branched species form a remarkably homogenous section, for which I propose the name Coeloxylosteum, in reference to the hollow branches. The other section, however, for which the name Isika of Adanson in a somewhat enlarged sense may be used, presents a very great variety of different characters, especially as regards the bractlets: sometimes these are entirely wanting, sometimes perfectly distinct and sometimes wholly connate, even so far as to form with the inclosed ovaries a kind of pseudocarp. The limb of the corolla varies from almost regular to distinctly two-lipped; the ovary varies from two- to three-celled and the bud scales and other vegetative characters also show great differences. Though these differences afford good characters to subdivide the species of this section into a number of well-defined subsections, it is rather difficult to group satisfactorily the subsections according to their affinities, since their relations cannot be expressed by linear sequence.

On the geographical distribution and the morphological and ecological aspects of the genus, which presents some very interesting facts, I shall speak more fully in another paper; only a few notes on the geographical distribution may follow here. The genus is distributed throughout the temperate regions of the northern hemisphere, crossing the equator only in the Malayan Archipelago, where it reaches Java as its most southern point, and northwards extending to the arctic circle. Its greatest segregation occurs in central and eastern Asia, where all sections and most subsections are represented. In North and Central America only twenty species occur, and the European together with the Mediterranean flora contains but eighteen species. All the rest are Asiatic. Of the two subgenera, Chamaecerasus is found throughout the whole range of the genus, while Periclymenum does not extend so far north or southward, and in central Asia it is represented only by four species, each, however, belonging to a different subsection. In Europe and in North America, on the other hand, it is well represented by many more or less polymorphous species. Of the four sections of Chamaecerasus, the section Isika has the widest range, but does not reach the Malayan Archipelago. Isoxylosteum is restricted to the higher elevations of central Asia and Coeloxylosteum extends from western central Asia through the Mediterranean region to Spain and Morocco. Nintooa is well represented in eastern and southern Asia and appears again in the western part of the Mediterranean region. In North America the subgenus Chamaecerasus is represented only by the section Isika with 7 species, one of them circumpolar.

In accounting for all published specific and varietal names, I have omitted purposely any reference to the 270 new species proposed by Gandoger,* since his names seem to have their origin only in the wish to give to each specimen

* Flora Europaea **11**: 14–28 (1886).

of his private herbarium a separate name. As he has not paid any attention to previously published names except the Linnean ones, his nomenclature cannot be regarded as resting on scientific principles and may therefore be passed over, as has been done by the editors of the Index Kewensis.

In the course of the study of the genus, the following herbaria have been consulted: the Gray Herbarium and the herbarium of the Arnold Arboretum, Harvard University, the herbarium of the Missouri Botanical Garden, St. Louis, the herbarium of Columbia University and of the New York Botanic Garden, the herbarium of the Academy of Natural Sciences, Philadelphia, the National Herbarium at Washington, the Biltmore Herbarium, Biltmore, N. C., the herbarium of the Royal Botanic Museum at Berlin, the herbarium of the University of Goettingen (including the Grisebach Herbarium), the herbarium of the Royal Botanic Garden at Kew, the herbarium of the Museum of Natural History at Paris, and the herbarium of the Botanic Garden at Brussels. From the herbarium of the Imperial Botanic Garden at St. Petersburg and from the Herbier Boissier at Chambézy near Geneva, a considerable number of specimens, partly types, were kindly sent to me for examination. I beg to acknowledge my sincerest thanks to all those in charge of the above named institutions. I am also greatly indebted to Professor E. Koehne of Friedenau-Berlin, who kindly loaned me the Loniceras of his herbarium and has furnished me moreover with much valuable information. I am likewise under obligation for material and information to Mr. George Nicholson of Kew, Mr. M. L. de Vilmorin of Paris, Mr. H. Zabel of Gotha, formerly of Muenden, Mr. E. Wolf of St. Petersburg, Mr. J. Kesselring of St. Petersburg, Mr. E. Rettig of Jena, Mr. L. Beissner of Bonn, Mr. A. Purpus of Darmstadt, Professor J. Battandier of Alger-Mustapha, Mr. W. Lipsky of St. Petersburg and Mr. Joaquim de Mariz of Coimbra.

A great aid in the study of the genus has been the opportunity to observe more than one-third of all species in a cultivated state, — most of them for years. The general conception of the affinities of the different species and of their most natural arrangement I gained first from the study of the living plants, the close observation of which revealed characters and combinations of characters which probably would have remained unnoticed in herbarium specimens. In addition to the living collections of the Arnold Arboretum and of the Botanic Garden of the University of Goettingen, where I began the study of the genus, I have made valuable observations in such other living collections as those of the botanic gardens of Kew, Berlin, Darmstadt, and Muenden, the collection of Mr. M. L. de Vilmorin at Les Barres, France, and other gardens.

With the exception of three species, *L. Sumatrana*, *L. trichosantha* and *L. Kachkarovi*, I have seen specimens of all species enumerated in the present paper. Where I have seen type specimens the name of the collector is marked with an exclamation point (!).

As the genus has not before been treated comprehensively I have taken great pains to collect all bibliographical references of taxonomic importance, to serve as a base for further investigations and studies. All the references are quoted from their original places of publication with a few exceptions, when the source of information is always given.

LONICERA.

Lonicera, Linné [Gen. Pl. 57 (1737); Hort. Cliff. 57 (1737); Syst. Veg. ed. 2. 19 (1740)]; Spec. Pl. 173 (1753). — Muenchhausen, Hausvater **5**: 192 (1770). — Scopoli, Fl. Carn. ed. 2. **1**: 152 (1772). — Lamarck, Enc. Méth. Bot. **1**: 727 (1783); Tabl. Enc. Méth. Bot. **2**: 149 (1793). — Loureiro, Fl. Cochinch. **1**: 149 (1793). — Willdenow, Spec. Pl. 1^2: 982 (1797); Enum. Pl. Hort. Berol.

220 (1809). — Desfontaines, Fl. Atl. **1**: 183 (1798). — Persoon, Syn. Pl. **1**: 213 (1805). — A. P. De Candolle, Fl. Franç. **4**: 269 (1805); Prodr. **4**: 330 (1830). — Poiret, Enc. Méth. Bot. Suppl. **2**: 227 (1811). — Stokes, Bot. Mat. Med. **1**: 370 (1812). — Link, Enum. Pl. Hort. Berol. **1**: 221 (1821). — Wallich in Roxburgh, Fl. Ind. ed. 2. **2**: 174 (1824). — Sprengel, Syst. Veg. **1**: 757 (1825). — Ledebour, Fl. Alt. **1**: 247 (1829); Fl. Ross. **2**: 387 (1844). — Loudon, Hort. Brit. 79 (1830); Arb. Frut. Brit. **2**: 1042 (1838). — Hooker, Fl. Bor.-Am. **1**: 281 (1834). — Bertoloni, Fl. Ital. **2**: 555 (1835). — Lindley, Nat. Syst. Bot. ed. 2. 248 (1836). — Koch, Syn. Fl. Germ. 324 (1837). — Endlicher, Gen. Pl. 568 (1838)). — Spenner in Nees von Esenbeck, Gen. Pl. Fl. Germ. fasc. 21: 401. *pl. 2* (1840). — Torrey & Gray, Fl. N. Am. **2**: 4 (1841). — Walpers, Rep. Bot. **2**: 447 (1843). — Grisebach, Fl. Rumel. **2**: 153 (1844). — Gray, Man. Bot. 171 (1848). — Kirillow, Lonic. Russ. Reich. 9 (1849). — Grenier & Godron, Fl. France **2**: 8 (1850). — K. Koch, Linnaea **24**: 477 (1851); Dendr. **2**^{1}: 7 (1872). — Miquel, Fl. Ned. Ind. **2**: 125 (1856). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 165 (1858). — Bentham & Hooker, Gen. Pl. **2**: 5 (1873). — Franchet & Savatier, Enum. Plant. Jap. **1**: 203 (1875); **2**: 383 (1879). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 35; Mél. Biol. **10**: 55 (1877). — Baillon, Hist. Pl. **7**: 499 (1880). — Clarke in Hooker, Flor. Brit. Ind. **3**: 9 (1882). — Gray, Syn. Fl. N. Am. **1**^{2}: 14 (1884). — Nicholson, Dict. Gard. **2**: 296 (1887); Hand-list Arb. Kew 2: 11 (1896). — Dippel, Handb. Laubholzk. **1**: 200 (1889). — Laguna, Fl. For. Esp. **2**: 44 (1890). — Fritsch in Engler & Prantl, Nat. Planzenf. IV. 4 : 166 (1891). — Koehne, D. Dendr. 541 (1893). — Britton & Brown, Ill. Fl. N. U. S. Can. **3**: 237 (1898). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 3 (1898). — Bubani, Fl. Pyr. **2**: 331 (1900). — Rehder in Bailey, Cycl. Am. Hort. **2**: 939

(1900). — Graebner, Bot. Jahrb. **29**:594 (1901). — Penkowsky, Derev. Kust. Ross. **3**:8 (1901).

—— Miller, Gard. Dict. ed. 7 (1759). See subgen. Chamaecerasus.

—— Necker, Elem. Bot. **1**:128 (1790), and his *Cobaea*.*

—— Torrey, Fl. N. M. Sect. U. S. **1**:242 (1824). See subgen. Periclymenum.

Periclymenum, Miller, Gard. Dict. ed. abridg. **3** (1754). See subgen. Periclymenum.

Xylosteum, Miller, Gard. Dict. ed. abridg. **3** (1754). See subgen. Chamaecerasus.

Caprifolium [Linné, Syst. Veg. (1735)]. — Zinn, Cat. Pl. Gotting. 210 (1757). — Haller, Hist. Stirp. Helv. **1**:300 (1768). — Lamarck, Fl. Franç. **3**:364 (1778). — Gaertner, Fruct. Sem. Pl. **1**:135 (1788). — Kuntze, Rev. Gen. Pl. **1**:273 (1891). — Greene, Fl. Francisc. 345 (1892).

—— Adanson, Fam. Pl. **2**:157 (1763). See subgen. Periclymenum.

Isika, Adanson, Fam. Pl. **2**:501 (1763). See sect. Isika.

Chamaecerasus, Medicus, Phil. Bot. **1**:126 (1789). See subgen. Chamaecerasus.

Cobaea, Necker, Elem. Bot. **1**:129 (1790). See subgen. Chamaecerasus.

Chamerasia, Rafinesque, Ann. Gen. Sci. Phys. **6**:83 (1820). See subgen. Chamaecerasus.

*** This method of quotation is adopted to indicate that the two genera together equal the conception (in this case *Lonicera*, Linné) to which the first (in this case *Lonicera*, Necker) is referred as a synonym; *Lonicera*, Neck. being not exactly synonymous with *Lonicera*, Linn., as it comprises only one part of the latter genus. Mathematically it could be expressed thus: *Lonicera*, Neck. $<$ *Lonicera*, Linn. emend. Willd. True synonyms of *Lonicera*, Linn. emend. are only *Caprifolium*, Zinn, and *Euchylia*, Dulac; all the others are but synonyms of *Lonicera* in part.**

Periclyma, Rafinesque, *l. c.* (1820). See subsect. Phenianthi.

Phenianthus, Rafinesque, *l. c.* (1820). See subsect. Phenianthi.

Nintooa, Sweet, Hort. Brit. ed. 2. 258 (1830). See sect. Nintooa.

Distegia, Rafinesque, New Fl. N. Am. **3**:20 (1830). See subsect. Distegiae.

Euchylia, Dulac, Fl. Haut.-Pyrén. 463 (1867).

Flowers pentamerous, usually zygomorphous, sometimes actinomorphous; calyx tube ovoid or subglobose with usually short, 5-toothed or nearly truncate limb persistent or deciduous; corolla tubular-funnelform to campanulate, bilabiate with a 4-lobed upper lip or with regular or subregular 5-lobed limb, the lobes imbricate, tube short, gibbous at the base, rarely calcarate, or slender and often elongated; stamens 5, inserted in the tube, usually near the mouth, anthers oval to linear-oblong, usually exserted; ovary 2–3-, occasionally 4-, or rarely 5-loculed, cells 3–8-ovuled, ovules pendulous, affixed in two rows to the inner angles of the cells; style elongated, with capitate stigma, usually exserted and exceeding the stamens, rarely included in the tube; berries fleshy, usually few-seeded; seeds generally ovoid, compressed, with crustaceous, smooth or granulate testa, fleshy albumen and terete embryo; cotyledons generally oval.

Upright or twining, rarely creeping shrubs, glabrous or pubescent and often glandular, with fistulose or solid branches; leaves opposite, petioled or sessile and often connate at the base, entire or occasionally pinnately lobed, petioles sometimes with stipular connate appendages (interpetiolar stipules); flowers white or yellow, purple or scarlet, in simple cymes, two-flowered by suppression of the middle flower, or three-flowered and sessile, in the axils of normal leaves, or of bractlike leaves and aggregated in terminal spikes or panicles; individual flowers subtended

by bracts and bractlets, bractlets distinct or more or less connate, sometimes wanting, rarely tightly enveloping the ovaries and growing with them into a pseudocarp; berries usually red or scarlet, sometimes yellow, black or bluish-black, rarely white, distinct or in more or less connate pairs, rarely forming together with the bractlets a pseudocarp.

More than 150 species in the temperate and subtropical regions of the northern hemisphere, northward extending to the arctic circle and south to the Malayan Archipelago, southern Asia, North Africa, Madeira and Mexico.

Subgenera and Sections of Lonicera.

A. Flowers in two-flowered, axillary, peduncled or rarely almost sessile cymes, sometimes crowded at the end of the branches; leaves always distinct. I. Subgen. Chamaecerasus (sp. 1–131).

B. Corolla actinomorphous, with 5 nectaries; leaves plane or carinate in vernation; branches with solid pith; accessory buds wanting. 1. Sect. Isoxylosteum (sp. 1–8).

BB. Corolla zygomorphous, with 1 to 3 nectaries and with usually more or less unilaterally ventricose or gibbous, rarely calcarate tube, and two-lipped or nearly regular limb; leaves convolute or occasionally involute in vernation; accessory buds often present.

C. Upright or sometimes procumbent shrubs; cymes always axillary; corolla with two-lipped or almost regular limb; fruits often connate, usually red.

D. Branches with solid pith; ovaries more or less connate or almost distinct; bractlets wanting or partly or wholly connate, rarely free (limb then almost regular), if partly connate the union closer between bractlets of different flowers; corolla two-lipped or almost regular; ovaries 2- or 3-celled. 2. Sect. Isika (sp. 9–88).

DD. Branches with quickly evanescent pith, fistulose; ovaries always distinct; bractlets distinct or the bractlets of the same flower more or less connate with each other; corolla always distinctly two-lipped; ovaries always 3-celled. 3. Sect. Coeloxylosteum (sp. 89–102).

CC. Twining or creeping shrubs; cymes often forming terminal panicles; corolla always two-lipped, often with very long and slender tube; fruits distinct (except in *L. calcarata*), black or rarely white; branches hollow, rarely solid.
4. Sect. NINTOOA (sp. 103–131).

AA. Flowers in three-flowered sessile cymes forming whorls or spikes at the end of the branches; fruits red, always distinct. Twining, rarely dumose shrubs with hollow branches; upper leaves usually connate. II. Subgen. **Periclymenum** (sp. 132–154).

Subgenus I. CHAMAECERASUS.

Lonicera § *Chamaecerasus*, Linné, Spec. Pl. 173 (as Chamaecerosa) (1753). — Willdenow, Spec. Pl. **1**²: 985 (1797); Enum. Pl. Hort. Berol. 221 (1809).

—— —— Maximowicz, Bull. Acad. Sci. St.' Pétersb. **24**: 37; Mél. Biol. **10**: 59 (1877), and § Nintooa (placed under the subgenus Caprifolium).

Xylosteum, Miller, Gard. Dict. ed. abridg. **3** (as Xylosteon) (1754). — Jussieu, Gen. Pl. 212 (1789). — Ventenat, Tabl. Règne Vég. **2**: 597 (1799). — Dumont de Courset, Bot. Cult. **2**: 274 (1802). — Michaux, Fl. Bor. Am. **1**: 106 (1803). — Pursh, Fl. Am. Sept. **1**: 161 (1803). — Nuttall, Gen. N. Am. Pl. **1**: 138 (1818). — Humboldt, Bonpland & Kunth, Nov. Gen. Am. **3**: 426 (1818). — S. F. Gray, Nat. Arr. Brit. Pl. **2**: 487 (1821). — Bigelow, Fl. Bost. ed. 2. 88 (1824). — Torrey, Fl. N. M. Sect. U. S. **1**: 244 (1824). — D. Don, Fl. Nepal. 140 (1825). — Bartling, Ord. Pl. 214 (1830). — Fuss, Fl. Transylv. Exc. 284 (1866). — Howell, Fl. N. W. Am. **1**: 281 (1900).

—— Adanson, Fam. Pl. **2**: 157 (1763), and his *Isika*.* — Moench, Meth. Pl. 502 (1794). — Borkhausen, Handb. Forstbot. **2**: 1679 (1803).

—— [Tournefort, Inst. Rei Herb. **1**: 609 (1700).] —

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* See foot-note, p. 37.

Rafinesque, Ann. Gen. Sci. Phys. **6**: 83 (1820),* and his *Chamerasia*.— Spach, Hist. Nat. Vég. **8**: 355 (1839), and his *Lonicera* and § Nintooa.

—— Rafinesque, New Fl. N. Am. **3**: 21 (1836), and his *Distegia* and *Lonicera* § Eunemium.

—— Webb, Iter Hisp. 42 (1838), and his *Nintooa*.

Lonicera, Miller, Dict. Gard. ed. 7 (1759). — Roemer & Schultes, Syst. Veg. **5**: 254 (1819). — K. Koch, Hort. Dendr. 295 (1853).

—— Sweet, Hort. Brit. ed. 2. 258 (1830), and his *Nintooa*.

—— Spach, Hist. Nat. Vég. **8**: 347 (1839), and *Xylosteum*, Raf. and his *Caprifolium* § Nintooa.

Chamaecerasus, [Tournefort, Inst. Rei Herb. **1**: 609 (1700)]. — Medicus, Phil. Bot. **1**: 126 (1789), and *Xylosteum*, Raf.

—— Delarbre, Fl. d'Auvergne ed. 2. 131 (1800).

Cobaea, Necker, Elem. Bot. **1**: 129 (1790), and part of his *Lonicera*.

Lonicera § *Xylosteum*, De Candolle, Fl. Franç. **4**: 271 (1805); Prodr. **4**: 333 (1830).

—— Clarke in Hooker, Fl. Brit. Ind. **3**: 11 (1882), and his § Caprifolium.

Chamerasia, Rafinesque, Ann. Gen. Sci. Phys. **6**: 83 (1820), and his *Xylosteum*.

Lonicera § *Eulonicera*, Dippel, Handb. Laubholzk. **1**: 220 (1893) and § Nintooa.

—— —— Koehne, D. Dendr. 542 (1893).

—— —— *Labiatiflorae* & *Regulariflorae*, Zabel in Ruempler, Ill. Gartenbau — Lex. ed. 3. 467, 468 (1901), and § Nintooa.

This subgenus contains about 125 species, thus repre-

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* According to the species on which this genus is founded it should be referred to § Isika, but according to the description it would include § Isoxylosteum, and may therefore be inserted here.

senting five-sixths of all known Loniceras, and covers the whole geographical range of the genus. It is clearly distinguished from the second subgenus by its inflorescence, though occasionally three-flowered cymes appear and in *Lonicera biflora*, as I have observed in cultivated plants, the inflorescence at the end of the branches becomes sometimes quite sessile and regularly three-flowered, resembling thus exactly the inflorescence of a true Periclymenum, but the lower flowers are always in pairs. The section Nintooa which possesses, as *L. biflora* shows, some relation to Periclymenum, has been considered by some authors as another subgenus, but it is certainly much more closely allied to Chamaecerasus than to Periclymenum, which it resembles only in the climbing habit and the shape of the corolla.

Sect. 1. **ISOXYLOSTEUM**, sect. nov.

Low shrubs with slender upright or procumbent branches, in high alpine regions often forming dwarf compact shrubs with rigid sometimes almost spiny branchlets; winter buds small, with two pairs of outer keeled scales; leaves rather small, plane or carinate in bud, sometimes in threes and with revolute margin; bracts usually leafy; bractlets conspicuous, mostly connate into a cupula; corolla tubular-campanulate, with spreading 5-lobed limb; tube with long hairs inside and 5 nectaries at the base; stamens inserted in the middle of the tube or at the mouth; style included or exserted; ovaries connate or separate, 2- to 3-loculed, each cell with 2 to 3 ovules.

A group of 7 species restricted to the higher mountains of central Asia and distributed from Turkestan to central China and the Sikkim Himalaya.

A. Stamens inserted about the middle of the tube, style half as long or as long as the tube; ovaries 2- to 3-loculed; fruits red or bluish-black. **1. Subsect. MICROSTYLAE (sp. 1–7).**

AA. Stamens inserted at the mouth, like the style exserted; ovaries almost distinct, 3-loculed; fruit pale violet or whitish; glabrous shrub. 2. Subsect. SPINOSAE (sp. 8).

Subsect. 1. **Microstylae**, subsect. nov.

Seven species of the distribution of the section. In their short style they differ from all other Loniceras except *L. Mexicana* which also has the style shorter than the tube. This subsection could be easily divided into two, those with two- and those with three-celled ovary, but as all the species have well-marked characters in common it seems more natural to unite them.

A. Ovaries 2-loculed, wholly connate; style half as long as tube; bractlets wholly connate; fruit red.

B. Leaves oval or ovate to oblong, obtuse, glabrous, about 1 cm. long; peduncles upright; tube twice as long as limb, corolla glabrous without, pinkish. 1. *L. Myrtillus*, Hook. f. & Thoms.

BB. Leaves oblong-lanceolate, acute or acuminate, usually pubescent beneath, 2–4 cm. long; peduncles drooping; tube thrice as long as limb; corolla white or pinkish, glabrous or pubescent without. 2. *L. angustifolia*, Wall.

AA. Ovaries 3-loculed, distinct or connate; bractlets sometimes distinct

B. Style as long as tube; ovaries connate; fruit bluish-black; corolla whitish, pubescent without, nodding; leaves oblong, 1.5–4 cm. long, villous beneath. 3. *L. tomentella*, Hook. f. & Thoms.

BB. Style half as long as tube; ovaries distinct; fruit red; corolla rosy-purple or pink, upright.

C. Calyx lobes ovate to lanceolate, acute; leaves 1–3 cm. long

D. Leaves tomentose or pubescent beneath, at least on the flowering branches, often in threes; low shrubs with rigid or procumbent branches.

E. Leaves oblong-lanceolate, acute, dark green and glossy above, whitish-tomentose beneath; corolla pubescent without, rarely glabrous; bractlets connate, at least the anterior. 4. *L. Thibetica*, Franch. & Savat.

EE. Leaves ovate-oblong or oblong, obtusish or acutish, dull green above, tomentose or villous beneath, often glabrescent; corolla usually pubescent without; bractlets distinct or connate only at the base. 5. *L. rupicola*, Hook. f. & Thoms.

DD. Leaves quite glabrous, oblong, obtusish, bluish-green; corolla glabrous outside; bractlets connate; upright, slender-branched shrub, sometimes procumbent.
6. *L. syringantha*, Maxim.

CC. Calyx lobes broadly ovate, obtuse; leaves 5–8 mm. long, obtuse with revolute margins, glabrous; bractlets connate, corolla glabrous; minute shrub, 2–5 cm. high.
7. *L. minuta*, Batal.

1. L. MYRTILLUS, Hooker fil. & Thomson, Jour. Linn. Soc. **2**: 168 (1858).— Brandis, For. Fl. 255 (1874).— Buser in Boissier, Fl. Or. Suppl. 276 (1888).— Dippel, Handb. Laubholzk. **1**: 254. *f. 166* (1889).— Koehne, D. Dendr. 543 (1893).— Rehder in Sargent, Trees & Shrubs **1**: 87. *pl. 44* (1903).

L. parvifolia Myrtillus, Clarke in Hooker, Flor. Brit. Ind. **3**: 13 (1882).
L. depressa Myrtillus, Nicholson, Hand-list Arb. Kew. **2**: 13 (1896).

Afghanistan (Collett, Aitchison). Himalayas: Kashmir (Thomson! Jacquemont, no. 2205, Jaeschke, J. D. Hooker); Kumaon (Strachey & Winterbottom); Sikkim (J. D. Hooker!) — Sometimes cultivated (Arnold Arboretum, Kew, Goettingen, etc.).

Var. DEPRESSA, Rehder in Sargent, Trees & Shrubs **1**: 87 (1903).

L. depressa, Royle, Ill. Bot. Him. 236 (1839), nom. nud. — Nicholson, Hand-list Arb. Kew **2**: 13 (1896).
L. parvifolia, Hooker fil. & Thomson, Jour. Linn. Soc. **2**: 168 (1858), not Hayne or Edgeworth. — Clarke in Hooker, Fl. Brit. Ind. **3**: 13 (1882). — Collett, Fl. Siml. 225 (1902).
Caprifolium parvifolium, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kumaon (Duthie); Nepal (Duthie); Sikkim (J. D. Hooker!)

This variety is distinguished from the type only by its broader leaf-like bracts and the longer peduncles sometimes almost as long as the leaves.

2. L. ANGUSTIFOLIA, Wallich, Cat. no. 480 (1828), nom. nud. — De Candolle, Prodr. **4**: 337 (1830). — Lindley, Jour. Hort. Soc. **3**: 238. *f.* (1848). — Lemaire, Fl. Serr. **4** 408^b. *f.* (1848). — Morren, Belg. Hort. **8**: 262. *f. 71* (1858). — Hooker fil. & Thomson, Jour. Linn. Soc. **2**: 167 (1859). — Brandis, For. Fl. 255 (1874). — Clarke in Hooker, Fl. Brit. Ind. **3**: 13 (1882). — Dippel, Handb. Laubholzk. **1**: 254. *f. 167* (1889). — Koehne, D. Dendr. 543 (1893). — Collett, Fl. Siml. 224 (1902).

Caprifolium angustifolium, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kashmir (Royle, Edgeworth, Jacquemont, no. 766 and 1011, Thomson); Kumaon (Wallich! Strachey & Winterbottom); Sikkim (J. D. Hooker, Madden). — Sometimes cultivated (Arnold Arboretum, Kew, etc.).

Tetramerous flowers are not uncommon in this species.

3. L. TOMENTELLA, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 167 (1858). — Hooker f., Bot. Mag. **106**. *pl. 6486* (1880). — Clarke in Hooker, Flor. Brit. Ind. **3**: 12 (1882). — Dippel, Handb. Laubholzk. **1**: 256. *f. 169* (1889). — Koehne, D. Dendr. 543 (1893).

Caprifolium tomentellum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Hypericum tenuicaule, Hort., ex Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 462 (1903).

Himalayas: Sikkim (J. D. Hooker!) — Sometimes cultivated (Goettingen, Kew, etc.).

4. L. THIBETICA, Bureau & Franchet, Jour. de Bot. **5**: 48 (1891). — Bois, Jour. Soc. Hort. France IV. **1**: 210 (1900). — Mottet, Rev. Hort. **1902**: 448. *f. 198–200* (1902). — Rehder in Sargent, Trees and Shrubs **1**: 89. *pl. 45* (1903).

L. rupicola Thibetica "Hort. gall.", Zabel in Beissner, Schelle and Zabel, Handb. Laubholz-Ben. 462 (1903).

Tibet (Prince d'Orléans! Soulié, no. 238). China: Szechuen (Przewalski, Pratt, no. 245, Soulié, no. 261); Yunnan (Delavay, no. 2337). — Sometimes cultivated (Arnold Arboretum, Kew, etc.).

5. L. RUPICOLA, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 168 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 13 (1882). — Koehne, D. Dendr. 543 (1893).

Caprifolium rupicolum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kumaon (Duthie). Tibet (J. D. Hooker! Strachey & Winterbottom!) — Sometimes cultivated (Goettingen, Kew, etc.).

This species is very variable in habit and pubescence; in high alpine regions it has short rigid branches, while in cultivation the branches elongate and become slender and procumbent. The pubescence varies on the same plant, the flowering branches have the leaves villous-pubescent beneath, while the leaves of the sterile branches are often quite glabrous. Also in the preceding species the leaves of the sterile branches become sometimes glabrous and at the same time the glossy upper surface changes to dull bluish-green.

6. L. SYRINGANTHA, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 49; Mél. Biol. **10**: 77 (1877). — Wolf, Gartenfl. **41**: 564. *f. 115, 116* (1892).

Caprifolium syringanthum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
L. rupicola syringantha, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 462 (1903).

China: Kansu (Przewalski!). Tibet (Potanin!). — Sometimes cultivated (Kew, Arnold Arboretum).

var. MINOR, Maximowicz, *l. c.*

China: Kansu (Przewalski!). Tibet (Soulié, no. 513 and 515).

Differs by smaller leaves, smaller short-peduncled flowers, ciliate bracts and bractlets and depressed habit.

var. **Wolfii**, var. nov.

Low glabrous shrub with slender often procumbent branches; leaves elliptic-oblong to narrow oblong, sometimes in threes, 1.5–3.5 cm. long and 0.5–1 cm. broad, truncate or broadly cuneate at the base, acutish and mucronulate at the apex, dull green above and glaucescent beneath; bracts leafy, exceeding the calyx teeth; cupula about as long as the ovaries and irregularly toothed; calyx teeth unequally connate at the base, ciliate; corolla 14 mm. long, glabrous, very fragrant, carmine pink.

From the type it differs chiefly by the procumbent habit, the longer and narrower leaves and the ciliate calyx teeth connate at the base. I take pleasure in associating with this handsome form the name of Mr. Egbert Wolf, the author of a valuable and exhaustive paper on Russian Loniceras, who first drew my attention to this form.

Introduced from central China into the nursery of Kesselring & Regel, St. Petersburg (herb. Arnold Arboretum); also Ladygin's no. 522 from Han-su (= Kansu?) and specimens from North Szechuen collected by Potanin seem to belong here, though the latter have the leaves slightly pubescent when young. The three preceding species are all closely related to each other and can perhaps as well be considered forms of one species; also the following is only a peculiarly modified form of this group of species.

7. L. MINUTA, Batalin, Act. Hort. Petrop. **12**:170 (1892). — Wolf, Gartenfl. **42**: 331 (1893).

L. syringantha deserticola, Maximowicz, in herb. Petrop.! (var. *desertorum*, Maxim., ex Batalin, *l. c.*)

China: Kansu (Przewalski!). Tibet (Przewalski!).

An ecologically very interesting form with short much

branched subterranean stem producing annual shoots only 3–5 cm. long which are killed during the winter as far as they have not been covered by the shifting soil of the desert. — *Plate 5.*

Subsect. 2. **Spinosae,** subsect. nov.

A group containing only one species occurring in eastern Turkestan, Tibet and western Himalaya. It is chiefly distinguished from the preceding group by the exserted stamens and styles. In the flowers of cultivated plants I have observed frequently only 3 nectaries, while in wild plants there seem to be always 5; this shows a transition from the actinomorphous to the zygomorphous flower.

8. L. SPINOSA, " Jacquemont ", Walpers, Rep. Bot. **2**: 449 (1843). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 168 (1858). — Brandis, For. Fl. 255 (1874). — Clarke in Hooker, Fl. Brit. Ind. **3**: 13 (1882). — Fritsch in Engler & Prantl, Nat. Pflanzenfam. IV. 4: 167. *f. 57B* (1891). — Koehne, Gartenfl. **39**: 178 (1890); D. Dendr. 544 (1893),

Xylosteum spinosum, Decaisne in Jacquemont, Voy. dans l'Inde 4: 78. _pl. 86._ (1844).
L. linearis, Royle, in herb.!, ex Hooker f. & Thomson, _l. c._ (1858).
Caprifolium spinosum, Kuntze, Rev. Gen. Pl. 1: 274 (1891).

Himalayas: Kashmir (Royle); Kunawur (Jacquemont!); Gharwhal (ex Hooker f. & Thomson). Tibet (T. Thomson, Schlagintweit, no. 1433). East Turkestan (Bellew).

var. ALBERTI, Zabel in Ruempler, Ill. Gartenbau — Lex. ed. 3. 468 (1901).

L. Alberti, Regel, Act. Hort. Petrop. 7: 550 (1880); Gartenfl. 30: 387. _pl. 1065_ (1881). — Dippel, Handb. Laubholzk. 1: 255. _f. 168_ (1889). — Hooker f., Bot. Mag. 121. _pl. 7394_ (1895). — Wolf, Isv. St. Peterb. Lesn. Inst. 3: 13. _pl. 13. f. 4–6_ (1898). — Penkowsky, Derev. Kust. Ross. 3: 18 (1901).
Chamaecerasus Alberti, Carrière, Rev. Hort. 1886: 547 (1886).

Turkestan (Regel! Krassnow, Fetissow). Tibet (Schlagintweit, no. 7020). — Sometimes cultivated as an ornamental shrub (Arnold Arboretum, etc.).

This variety differs by slender, not spiny branches, longer corolla with oblong lobes and the filaments twice as long as the anthers; in the type the lobes are ovate and the filaments about as long as the anthers.

Sect. 2. ISIKA, DC. emend.

Isika, Adanson, Fam. Pl. **2**: 501 (1763), and part of his *Xylosteum*. — Medicus, Phil. Bot. **1**: 126 (1789). — Moench, Meth. Pl. 504 (1794). — Borkhausen, Handb. Forstbot. **2**: 1681 (1803). — Roehling, Deutschl. Fl. ed. 2. **2**: 176 (1812).

Lonicera § *Isicae*, De Candolle, Prodr. **4**: 336 (1830), and part of his Cuphanthae and of his Chamaecerasi, excl. *L. angustifolia*.

This section contains about 75 species and is distributed almost through the whole range of the genus, but in Asia only one species extends southward beyond the Himalayas and none occurs in the Malayan Archipelago. The species of this section show great difference in their habit, in the structure of the winter buds, in foliage, in the size and shape of the bracts and bractlets, in the shape of the corolla and in other minor characters. Some species seem related to Isoxylosteum, others to Coeloxylosteum, while still others form clearly defined groups which exhibit no close affinity to other Loniceras.

A. Ovaries 2-loculed, rarely 3-loculed (ovaries then connate and bractlets wanting); corolla with subregular limb (except in *L. microphylla* and *L. cerasina*).

B. Corolla with subregular limb or indistinctly 2-lipped; seed small, 2–4 mm. long.

C. Bractlets wanting or present but not tightly enclosing the ovaries; fruit orange-yellow to scarlet, rarely dark blue; corolla pink or purple to yellowish-white.

3. Subsect. PURPURASCENTES (sp. 9–27).

CC. Bractlets wholly connate into a glabrous cupula tightly enclosing the ovaries and growing with them into a blue fruit; corolla whitish with subregular limb; winter buds with two outer scales. 4. Subsect. CERULEAE (sp. 28).

BB. Corolla distinctly two-lipped, the upper lip upright with short broad lobes; bractlets connate into a 4-lobed cupula, half as high as the ovaries; fruit red, with 2–4 smooth, about 6 mm. long seeds. 5. Subsect. CERASINAE (sp. 29).

AA. Ovaries 3-loculed; corolla with 2-lipped or subregular limb (and then the ovaries distinct).

B. Bractlets wholly connate into a cupula enclosing the distinct ovaries; fruit red.

C. Calyx with a cap-like emergence at the base, extending downward and covering the margin of the cupula; bracts generally subulate; corolla small, subregular or indistinctly 2-lipped, usually tinged reddish; leaves narrowed at the base; winter buds small with several pairs of outer scales. 6. Subsect. PILEATAE (sp. 30–32).

CC. Calyx without cap-like emergence; corolla distinctly 2-lipped, yellowish, 1.5–2 cm. long; bracts generally leaf-like, large; winter buds with two pairs of outer scales; petioles sometimes with stipular appendages.

D. Cupula connate with the base of the calyx and growing with the ovaries into a rather dry fruit; corolla with recurved and setose hairs. 7. Subsect. VESICARIAE (sp. 33–34).

DD. Cupula not connate with the calyx; ovaries outgrowing the cupula and becoming bright red; corolla soft-pubescent. 8. Subsect. CHLAMYDOCARPI (sp. 35–37).

BB. Bractlets only partly connate, rarely as high as ovaries, sometimes distinct or wanting.

C. Branches terminated by two axillary winter buds, only occasionally the terminal bud developed; accessory buds wanting; bractlets small or wanting; corolla white or yellowish-white; plant often setosely hispid.

D. Ovaries connate about one-half or more; bracts narrow; bractlets small, often indistinct; corolla 2-lipped; winter buds large with two outer bud scales; fruit scarlet. 9. Subsect. FRAGRANTISSIMAE (sp. 38–41).

DD. Ovaries distinct; bracts usually large and enveloping the ovaries; bractlets wanting (except in *L. Elisae*); corolla subregular or 2-lipped; winter buds with two or more outer bud scales; fruit scarlet (or blue ? in *L. cyanocarpa*). 10. Subsect. BRACTEATAE (sp. 42–57).

CC. Branches with terminal buds; several outer bud scales; accessory buds often present; bractlets present (often indistinct or caducous in *L. oblongifolia* and *conjugialis*).

D. Corolla with subregular limb; ovaries distinct.

E. Bractlets ovate, acute, about half as long as ovary; corolla white, ventricose at the base; fruit red; plant quite glabrous.

11. Subsect. PYRENAICAE (sp. 58).

EE. Bractlets and bracts large, enveloping the ovaries and the base of the corolla, glandular; corolla yellow to orange scarlet, gibbous or saccate at the base; fruit black, surrounded by the enlarged red bractlets. 12. Subsect. DISTEGIAE (sp. 59–60).

DD. Corolla 2-lipped with the tube shorter than or as long as limb.

E. Bracts minute, caducous; bractlets usually indistinct; leaves oblong, obtusish, finely pubescent on both sides; flowers yellowish, pubescent without; fruit red, seeds smooth, about 2 mm. long; pubescence of plant not glandular.

13. Subsect. OBLONGIFOLIAE (sp. 61).

EE. Bracts and bractlets persistent and conspicuous (except in *L. conjugialis* which has dull purple flowers); glands present, at least in the floral region, rarely entirely wanting.

F. Winter buds ovate, obtusish, scales usually ovate, caducous; peduncles long, generally in the axils of the lower leaves, usually thickened toward the apex; calyx with short obtuse teeth, deciduous; corolla yellowish or greenish-white, often tinged dull red; fruit red, seeds 3–6 mm. long, yellowish-white, smooth; leaves often glandular.

14. Subsect. ALPIGENAE (sp. 62–75).

FF. Winter buds ovate-lanceolate, sharply four-angled with acute, lanceolate, keeled and persistent scales; calyx teeth usually acute, persistent; corolla violet, purple or rarely yellowish-white; fruit red or black, seeds 2–4 mm. long with granulose brownish testa; leaves not glandular.

15. Subsect. RHODANTHAE (sp. 76–88).

Subsect. 3. **Purpurascentes**, subsect. nov.

A group of about 16 species, most of them Asiatic, distributed from the Himalayas eastward to Japan, west to Afghanistan and north to the Chinese province Kansu: of

the three American species two extend from the northern Atlantic States west to the Rocky Mountains and one is Mexican. They are mostly low, slender-branched shrubs, few of them reaching the height of 1.5 m. and most resemble the preceding group in habit and smallness of foliage; winter buds small, consisting of several pairs of outer scales, except in *L. gracilipes* which has only one pair of outer scales; the bractlets are small and connate into pairs or wanting, only *L. ramosissima* has bractlets connate into a cupula as high as the ovaries; calyx small with short rounded lobes or nearly truncate; corolla tubular-campanulate with unilaterally ventricose or gibbous tube and 5-lobed upright or slightly spreading limb, somewhat indistinctly bilabiate in *L. microphylla;* style pilose or glabrous; ovaries connate or distinct, 2-celled, except in *L. saccata;* fruit orange red or scarlet or dark blue in *L. obovata*. The flowers appear early in spring in the axils of the lower leaves or even the basal bracts of the branches, and are white or yellowish-white, usually tinged with red or pink or entirely purple or pink. The group shows relation to the Microstylae, Coeruleae and Pyrenaicae.

A. **Bractlets large, connate into a lobed cupula as high as the ovaries; bracts ovate-oblong, twice as long as the distinct ovaries; corolla slender, 12–16 mm. long; leaves oval to ovate, pubescent, 1–2 cm. long.** . **9. *L. ramosissima*, Franch. & Sav.**

AA. **Bractlets in pairs, scarcely one-third as high as the ovaries, or wanting.**

B. **Ovaries wholly or partly connate.**

C. **Bractlets present.**

D. **Corolla hairy outside, dull purple, gibbous at the base, about 15 mm. long; bracts narrow, as long or longer than ovaries; leaves oval to elliptic-oblong, acutish, pubescent, 2–4 cm. long.** **10. *L. purpurascens*, Walp.**

DD. **Corolla glabrous without, yellowish-white or tinged pink, scarcely 1 cm. long.**

E. Corolla gibbous at the base; bracts about as long as ovaries, usually subulate; leaves obovate, obtusish, narrowed into a very short petiole, glabrous or nearly so, about 1 cm. long.

11. *L. obovata*, Royle.

EE. Corolla slightly ventricose at the base, slender; bracts subulate, longer than ovaries; peduncles long and slender; leaves oblong-ovate, obtusish, pubescent or rarely glabrous, 1.5–3 cm. long.

12. *L. trichopoda*, Franch.

CC. Bractlets wanting or occasionally present, but minute.

D. Corolla with almost regular short upright limb, often tinged pink (unknown in *L. longa*).

E. Leaves 0.5–5 cm. long, obtuse to acutish.

F. Tube slightly ventricose at the base.

G. Leaves densely pubescent, at least beneath; bracts usually longer than ovaries.

H. Ovaries pubescent, rarely glabrous; corolla slender, glabrous without, 10–14 mm. long; leaves obovate to oblong-obovate, obtuse to acutish, pubescent beneath, 1.5–2.5 cm. long.

13. *L. stenosiphon*, Franch.

HH. Ovaries glabrous; corolla pubescent without, 7–8 mm. long; leaves elliptic to oval-oblong, pubescent, obtuse, scarcely over 1 cm. long.

14. *L. inconspicua*, Batal.

GG. Leaves glabrous or only sparingly pilose.

H. Bracts twice as long as ovaries, oblong-lanceolate, leafy; flowers appearing with or before the leaves, short-peduncled; style scarcely longer than corolla, pilose; corolla 8–9 mm. long; leaves elliptic, acutish, small.

15. *L. Litangensis*, Batal.

HH. Bracts slightly longer or shorter than ovaries; corolla 10–14 mm. long; peduncles slender.

I. Bracts ovate, acuminate, about as long as ovaries; anthers half exceeding the limb; leaves obovate to obovate-oblong, acutish, sparingly appressed pilose above, glabrous beneath, 8–12 mm. long.

16. *L. serpyllifolia*, Rehd.

II. Bracts subulate; anthers shorter than limb.

J. Leaves quite glabrous, cuneate-obovate, obtusish, glaucous beneath, 8–25 mm. long; corolla slender, 12 mm. long; style glabrous; bracts shorter than ovaries.

17. *L. Szechuanica*, Batal.

JJ. Leaves ciliate, sparingly pilose above and sometimes on the veins beneath, obovate to oblong-obovate, acute, 1.5–3 cm. long; corolla slender, 10–14 mm. long; style often pilose at the base; bracts as long or somewhat longer than ovaries.

18. *L. Tangutica*, Maxim.

FF. Tube distinctly saccate or gibbous at the base.

G. Leaves obovate or oval, 0.5–1 cm. long, ciliate, otherwise glabrous; flowers short-peduncled, 10 mm. long; bracts linear, slightly exceeding the calyx.

19. *L. aemulans*, Rehd.

GG. Leaves usually oblong, pubescent beneath, 1.5–5 cm. long; flowers slender-peduncled, about 12 mm. long; bracts oblong, leafy, exceeding the calyx. 20. *L. saccata*, Rehd.

EE Leaves 4–8 cm. long, oblong to elliptic-oblanceolate, acute or shortly acuminate, sparingly pilose on both sides; peduncles pilose, 2–2.5 cm. long; bracts lanceolate, shorter than fruit.

21. *L. longa*, Rehd.

DD. Corolla two-lipped, limb as long or shorter than tube, about 1 cm. long, yellowish-white; style pilose; peduncles slender, upright; leaves oval or obovate to oblong, finely pubescent, 1–2.5 cm. long; fruit orange red. 22. *L. microphylla*, Willd.

BB. Ovaries distinct or solitary.

C Bractlets wanting; bracts subulate; corolla campanulate, about 1 cm. long; stamens slightly exceeding the limb; peduncles slender, upright; leaves oblong-ovate to oblong-lanceolate, narrowed at both ends, sparingly pubescent, 3–5 cm. long. 23. *L. linderifolia*, Maxim.

CC. Bractlets present, but occasionally wanting.

D. Corolla yellowish-white, often tinged reddish, saccate at the base, 1.5–2 cm. long; stamens as long as limb.

E. Leaves ciliate, otherwise glabrous or loosely pubescent at first, ovate to ovate-oblong, acute, 5–8 cm. long. 24. *L. Canadensis*, Marsh.

EE. Leaves not ciliate, glabrous, rarely at first slightly hairy below and ciliate toward the base, broadly ovate to oblong, obtuse at both ends, 3–6 cm. long. 25. *L. Utahensis*, Wats.

DD. Corolla pink or purple, gibbous at the base.

E. Flowers in pairs; corolla tubular, purple, 18 mm. long; style shorter than tube and stamens scarcely exceeding the tube; leaves ovate-oblong, pubescent beneath, 3–6 cm. long. 26. *L. Mexicana*, Rehd.

EE. Flowers usually solitary, corolla pink, about 15 mm. long; stamens half as long, style as long as limb; leaves orbicular-ovate to rhombic-ovate or elliptic, acute or acutish, glabrous or pubescent, 3–6 cm. long. 27. *L. gracilipes*, Miq.

9. L. RAMOSISSIMA, "Franchet & Savatier", Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 47; Mél. Biol. **10**: 74 (1877). — Franchet & Savatier, Enum. Pl. Jap. **2**: 389 (1879).

Caprifolium ramosissimum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Japan: Hondo, Mt. Hakusan (Savatier, no. 2888! Rein!); Shikoku, Torigata-Yama (Makino, no. 384).

The specimen of Makino, collected on the island of Shikoku, has the leaves twice as large as the type specimen, and seems to represent the normal size of the foliage, while Savatier's specimens have probably been collected with the foliage not yet fully developed; in the flowers there is no difference whatever between the specimens from the two localities.

10. L. PURPURASCENS, Walpers, Rep. Bot. **2**: 449 (1843). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 169 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 12 (1882). — Buser in Boissier, Fl. Or. Suppl. 277 (1888). — Collett, Fl. Siml. 224 (1902).

L. sericea, Royle, Ill. Bot. Him. 236 (1839), nom. nud. — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 167 (1858). — Aitchison, Jour. Linn. Soc. **18**: 65 (1881).

Xylosteum purpurascens, Decaisne in Jacquemont, Voy. dans l'Inde. **4**: 79, *pl. 87* (1844).
Caprifolium purpurascens, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kashmir (Jacquemont! Clarke, Duthie); Sikkim (J. D. Hooker). Afghanistan (Aitchison). — Sometimes cultivated (Kew).

11. L. OBOVATA, Royle, Ill. Bot. Him. **1**: 236 (1839), nom. nud. — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 169 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 14 (1882). — Buser in Boissier, Fl. Or. Suppl. 276 (1888).

L. glauca, Royle, Ill. Bot. Him. 236 (1839), nom. nud., not Hill, or Hook. f. & Thoms.
L. parvifolia, Edgeworth, Trans. Linn. Soc. **20**: 60 (1851), not Hayne (herb. Kew!).
Caprifolium obovatum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kashmir to Kumaon (Royle! Jacquemont, Thomson, Lace, Duthie, Clarke, Edgeworth); Sikkim (Hooker). Afghanistan (Aitchison).

The name *Lonicera parvifolia* of Edgeworth was erroneously applied by Hooker and Thomson to a form of *L. Myrtillus*, to which *L. obovata* bears much resemblance in general habit, but Edgeworth's specimen and his description show clearly that his *L. parvifolia* is the same as *L. obovata*, Royle; the name *L. parvifolia*, however, cannot stand on account of the earlier homonym of Hayne. Also the undescribed *L. glauca* of Royle belongs here, as appears from one of his specimens in the Gray herbarium.

12. L. TRICHOPODA, Franchet and Savatier, Jour. de Bot. **10**: 317 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 210 (1900).

L. gracilipes, Graebner, Bot. Jahrb. **29**: 596 (1901), not Miquel.

China: Yunnan (Delavay!); Shen-si (Giraldi, no. 1770).

One of the type specimens (no. 1220) has bractlets about one-third as long as the ovaries, the other from "Yen-tze-hay" has none. A remarkable form is Giraldi's no. 1780, from Shen-si, which has glabrous leaves and the ovaries connate only one-third to one-half; bractlets are present. It may be distinguished as var. **Shensiensis** var. nov. Whether the specimens of Giraldi from Kuan-tou-shan (nos. 1776 and 1771) and Delavay's nos. 2068 and 3404 from Yunnan should be referred to this species as forms without bractlets or to the following species as forms with glabrous ovaries or should constitute a new species may remain undecided until more material is available.

13. L. STENOSIPHON, Franchet, Jour. de Bot. **10**: 318 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 210 (1900).

China: Yunnan (Delavay!); Szechuen (Farges!).

The specimens from Szechuen differ somewhat from those from Yunnan which Franchet according to his description seems to consider as the type; the leaves resemble in shape and pubescence more those of the preceding species and as there is among the specimens from Szechuen one with but slightly pubescent and one with glabrous ovaries, there seems to be no reliable character to distinguish them from the bractless forms of the preceding species. (See note under *L. trichopoda*.)

14. L. INCONSPICUA, Batalin, Act. Hort. Petrop. **14**: 173 (1895).

Tibet (Kachkarov!). — *Plate 6.*

15. L. LITANGENSIS, Batalin, Act. Hort. Petrop. **14**: 173 (1895).

Tibet (Kachkarov! Soulié, no. 541). China: Szechuen (Pratt, no. 752). — *Plate 7.*

Of this and the preceding species, fully developed leaves are not yet known; both bloom when the leaves begin to unfold.

16. **L. serpyllifolia**, spec. nov.

Upright shrub; branches slender, with light grayish-brown fibrous and shredding bark; branchlets nearly glabrous except two longitudinal rows of short hairs. Leaves obovate to oblong-obovate, 6–12 mm. long and 2.5–4.5 mm. broad, obtuse or acutish, gradually narrowed toward the base into a short petiole, about 1.5 long, ciliate and sparingly appressed-pilose above, glabrous and glaucous beneath. Flowers in pairs on glabrous, slender and drooping peduncles 9–12 mm. long, in the axils of the lower leaves; bracts ovate or ovate-lanceolate, acuminate, glabrous, as long as or slightly longer than the ovaries; bractlets none; ovaries wholly connate, about 2 mm. high, glabrous, 2-celled, occasionally 3-celled with one cell smaller and one-ovuled; calyx truncate; corolla tubular-funnel-form, 10 mm. long, apparently yellowish-white flushed with pink, ventricose at the base, glabrous without, hairy within below the insertion of the stamens; limb with 5 orbicular-ovate lobes about 1.5 mm. long; filaments glabrous, inserted somewhat above the middle of the tube, twice as long as the linear-oblong anthers; anthers partly exceeding the limb; style exceeding the stamens, with a few scattered hairs at the base; fruit unknown.

China: West Szechuen, near Takien-lu, 9000–13000 feet alt. (Pratt, no. 850, in herb. Barbey-Boissier). — *Plate 1. f. 1–5.*

Allied to *L. inconspicua* and the two following species, but differing from all by the partly exserted anthers and the broader bracts, and besides from *L. inconspicua* by the glabrous corolla and the glabrous under side of the leaves, from *L. Szechuanica* by its pubescence and from *L. Tangutica* by its much smaller foliage.

17. L. Szechuanica, Batalin, Act. Hort. Petrop. **14**: 172 (1895).

L. Tangutica glabra, **Batalin**, *l. c.* 171 (1895).

China: Szechuen (Potanin! Pratt, no. 257, Henry, no. 5561); Kansu (Potanin); Yunnan (Delavay, no. 2038). Tibet (Soulié, nos. 516, 189). — *Plate 8.*

The only distinctions I can find between *L. Tangutica* var. *glabra* and *L. Szechuanica* are the generally smaller leaves and the somewhat shorter and wider corolla of the latter; the length of the filaments seems very variable.

18. L. Tangutica, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 48; Mél. Biol. **10**: 75 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 367 (1888). — Wolf, Gartenfl. **40**: 580. *f. 104, 105* (1891). — Koehne, D. Dendr. 543 (1893).

Caprifolium Tanguticum, **Kuntze**, **Rev. Gen. Pl. 1**: 274 (1891).

China: Kansu (Przewalski! Potanin); Szechuen (Henry, Farges); Hupeh (C. H. Wilson, no. 2050a); Yunnan (Delavay, nos. 3814, 3808). — Sometimes cultivated (Goettingen, Muenden).

The specimens from Yunnan differ by longer somewhat leafy bracts, the hairy young branchlets and the broader obovate leaves.

19. **L. aemulans**, spec. nov.

Upright, apparently low shrub with slender, dark gray branches and numerous short often spurlike lateral branchlets; young branchlets glabrous except two longitudinal rows of minute hairs. Leaves obovate or oval, 6–10 mm. long, obtuse or acutish, narrowed into a short petiole, sparingly and long ciliate especially toward the base, otherwise glabrous on both sides or occasionally with a few hairs above when young, dull green above and

glaucescent beneath with distinct darker veins. Flowers in pairs on short glabrous peduncles 2–4 mm. long, appearing with the leaves at the base of the young branchlets; bracts linear, slightly exceeding the calyx; bractlets none; ovaries connate about two-thirds, 2-celled; calyx cupulate, short, indistinctly 5-lobed; corolla tubular-funnelform, about 10 mm. long, apparently yellowish, distinctly gibbous at the base, limb with 5 orbicular-ovate lobes 1.5–2 mm. long; stamens as long as or slightly exceeding the limb, filaments inserted somewhat below the incisions of the limb, about as long as or somewhat longer than the oblong anthers; style exserted, glabrous; fruit unknown.

China: Western Kansu (Potanin, May 14, 1885, in herb. Petrop.).—*Plate 2. f. 10, 11.*

This species resembles in its habit very much *L. obovata*, *L. microphylla* and *L. Szechuanica;* from the first it is distinguished by the absence of the bractlets, from the second by the subequal limb and from the third species as well as from *L. serpyllifolia* and *L. Tangutica* by the gibbous corolla; from the following species with which it shares the gibbous corolla it is easily distinguished by the shape of the nearly glabrous leaves and the short peduncles.

20. L. SACCATA, Rehder in Sargent, Trees & Shrubs **1**: 39. *pl. 20* (1902).

***L. no. 32, spec. nov.*, Hemsley, Jour. Linn. Soc. 23: 368 (1888).**

China: Szechuen (Henry, nos. 5680! 5680A! Faber, no. 66); Hupeh (Henry, nos. 5311! 5306! 5306A! 4053, E. H. Wilson, no. 445); Shensi (Giraldi, no. 128).

f. Wilsoni, f. nov.

Leaves much broader, oval, obovate or ovate, 2.5–4 cm. long, 1.5–2 cm. broad; calyx larger, ciliate.

West Hupeh (E. H. Wilson, no. 709).

This species seems to be the only one in this subsection which has the ovary regularly three-celled, but in all other characters, except its saccate corolla, it shows a close relation to *L. Tangutica* and its allies.

21. **L. longa**, spec. nov.

Upright shrub with rather short branches appearing usually knotty on account of the very short internodes and the persistent bud scales; terminal winter bud ovate-lanceolate, about 6 mm. long, consisting of several lanceolate scales. Leaves oblong-obovate to oblong-oblanceolate, 4–8 cm. long, gradually narrowed into a short, pilose petiole, 2–4 mm. long, acute or acuminate, ciliate and sparingly appressed-pilose on both sides, more densely beneath along the veins, dull green above, grayish-green beneath and with the midrib and the 4–6 pairs of secondary veins prominent. Flowers unknown; fruits on slender upright, pilose peduncles about 2 cm. long; berries wholly connate, about 6 mm. across, purple, with few seeds 2 mm. long; bracts lanceolate, shorter than the fruit; bractlets wanting; calyx apparently small and indistinctly toothed.

China: Hupeh (Henry, no. 6960, in herb. Kew and Berlin). — *Plate 1. f. 6.*

There can be little doubt that this species belongs with the group of *L. Tangutica* and *L. microphylla* and though the flowers are unknown, the foliage is distinct enough to warrant its description as a new species.

22. L. MICROPHYLLA, "Willdenow," Roemer & Schultes, Syst. Veg. **5**: 258 (1819). — Ledebour, Fl. Alt. **1**: 248 (1829); Ic. Pl. Fl. Ross. **3**: 8. *pl. 213* (1831); Fl. Ross. **2**: 391 (1844). — De Candolle, Prodr. **4**: 336 (1830). — Bunge, Mém. Sav. Etr. Acad. Sci. St. Pétersb. **2**: 533 (1835). — Loudon, Arb. Frut. Brit. **2**: 1057 (1838). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 171 (1858). — Regel, Bull. Soc. Nat.

Mosc. **40**[1]**:** 5 (1867); Act. Hort. Petrop. **6:** 304 (1880). — K. Koch, Dendr. **2**[1]**:** 33 (1872). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24:** 41; Mél. Biol. **10:** 64 (1877). — Clarke in Hooker, Fl. Brit. Ind. **3:** 15 (1882). — Forbes & Hemsley, Jour. Linn. Soc. **23:** 365 (1888). — Buser in Boissier, Fl. Or. Suppl. 277 (1888). — Dippel, Handb. Laubholzk. **1:** 249. *f. 161* (1889). — Koehne, D. Dendr. 547 (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3:** 19. *pl. 9. f. 1, 2. pl. 14. f. 12, 13* (1898).

L. alpigena, Sievers in Pallas, Neue Nord. Beitr. **7:** 274 (1796), not Linné.

L. Sieversiana, Bunge, Mém. Sav. Etr. Acad. Sci. St. Pétersb. **2:** 534 (1835). — Karelin & Kirilow, Bull. Soc. Nat. Mosc. **15:** 371 (1842). — Kirillow, Lonic. Russ. Reich. 60 (1849).

L. Bungeana, Ledebour, Fl. Ross. **2:** 391 (1844). — Walpers, Rep. Bot. **6:** 6 (1846). — Kirillow, Lonic. Russ. Reich. 66 (1849). — Regel, Russk. Dendr. 142 (1873). — Penkowsky, Derev. Kust. Ross. **3:** 16 (1901).

Xylosteum Sieversianum, Ruprecht, Mém. Acad. Sci. St. Pétersb. **14**[4]**:** 50 (1869).

Xylosteum Bungeanum, Ruprecht, *l. c.*

Caprifolium microphyllum, Kuntze, Rev. Gen. Pl. **1:** 274 (1891).

Caprifolium Bungeanum, Kuntze, *l. c.*

Afghanistan (Aitchison). Turkestan: Altai Mts. (Regel, Schrenk, Potanin, Bunge). Himalayas: Kashmir (Jacquemont, Thomson, Clarke). Tibet (Schlagintweit). China: Kansu (Przewalski). Mongolia (David).

The species has been divided into the two following varieties, but the differences seem too slight and inconstant to keep them separate as different forms, much less as species.

var. ROBUSTIOR, Ledebour, Fl. Alt. **1:** 249 (1829); Ic. Fl. Ross. **3:** 8. *pl. 213. f. 1a* (1831). — Regel, Bull. Soc. Nat. Mosc. **40**[1]**:** 5 (1867).

L. microphylla Sieversiana, Trautvetter, Bull. Acad. Sci. St. Pétersb. **39**[1]**:** 332 (1866).

This is the type of the species, and as synonyms belong here *L. Sieversiana*, *Xylosteum Sieversianum* and *Caprifolium microphyllum*.

var. GRACILIOR, Ledebour, Fl. Alt. **1**:249 (1829); Ic. Flor. Ross. **3**:8. *pl. 213. f. 2b* (1831).

L. microphylla Bungeana, Trautvetter, Bull. Acad. Sci. St. Pétersb. **39**[1]:332 (1866).

Here belong *L. microphylla*, Bunge, *L. Bungeana*, *Xylosteum Bungeanum* and *Caprifolium Bungeanum*. This form has been distinguished from the type by the upright peduncles being about as long as the leaves, by the distinctly gibbous corolla, the not wholly connate fruits and the more glaucous, less pubescent and sometimes acutish leaves.

23. L. LINDERIFOLIA, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**:50; Mél. Biol. **10**:77 (1877).

Caprifolium linderifolium, Kuntze, Rev. Gen. Pl. **1**:274 (1891).

Japan: Hondo (Tschonoski! Faurie, no. 13110).—*Plate 1. f. 7–9.*

This species was hitherto known only from fruiting specimens collected by Tschonoski, but in Père Faurie's collection (herb. Paris) there is a flowering specimen which apparently belongs here; the leaves are smaller than in the type and sparingly pubescent on both sides; peduncle about 2 cm. long, upright, puberulous; bracts subulate, slightly longer than the ovaries, glabrous; bractlets wanting; ovaries distinct, oval; calyx very short, truncate; corolla campanulate, somewhat unequal at the base, about 1 cm. long, apparently whitish tinged with purple, glabrous without; limb about one-fourth the length of the corolla, with 5 upright almost equal, rounded lobes; stamens slightly exceeding the corolla, style ex-

serted. The broad campanulate corolla is remarkable and unlike that of any other species.

24. L. Canadensis, Marshall, Arb. Am. 81 (1785). — Roemer & Schultes, Syst. Veg. **5**: 260 (1819). — Sprengel, Syst. Veg. **1**: 759 (1825). — Barnhart, Bull. Torrey Bot. Club. **26**: 378 (1899).

L. ciliata, Muhlenberg, Cat. Pl. Am. Sept. 23 (1813), nom. nud. — Poiret, Enc. Méth. Bot. Suppl. **5**: 612 (1817). — Roemer & Schultes, Syst. Veg. **5**: 256 (1819). — De Candolle, Prodr. **4**: 335 (1830). — Hooker, Fl. Bor.-Am. **1**: 283 (1834). — Loudon, Arb. Frut. Brit. **2**: 1053 (1838). — Torrey & Gray, Fl. N. Am. **2**: 9 (1841). — Torrey, Fl. N. York, **1**: 299. *pl. 42* (1843). — K. Koch, Dendr. 2^1: 29 (1872). — Gray, Syn. Fl. N. Am. 1^2: 15 (1884). — Dippel, Handb. Laubholzk. **1**: 252. *f. 164* (1889). — Koehne, D. Dendr. 545 (1893). — Britton & Brown, Ill. Fl. N. Stat. Can. **3**: 241. *f. 3465* (1898).

Xylosteum Tataricum, Michaux, Fl. Bor. Am. **1**: 166 (1803), not Dumont de Courset.

Xylosteum ciliatum, Pursh, Fl. Am. Sept. **1**: 161 (1814). — Nuttall, Gen. N. Am. Pl. **1**: 138 (1818). — Bigelow, Fl. Boston. ed. 2. 88. (1824).

Caprifolium ciliatum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Northeastern North America: from eastern Canada west to the Saskatchewan and Minnesota, south to Pennsylvania, Michigan and Wisconsin (Torrey, Pringle, Robinson, Sargent, Faxon, Macoun, Sandberg, et al.). — Sometimes cultivated (Arnold Arboretum, Goettingen, etc.).

25. L. Utahensis, Watson, Bot. King Exp. 133 (1871); Proceed. Am. Acad. Sci. **17**: 374 (1882). — Gray, Syn. Fl. N. Am. 1^2: 15 (1884).

Caprifolium Utahense, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Xylosteum Utahense, Howell, Fl. N. W. Am. **1**: 282 (1900).
L. ebractulata, Rydberg, Mem. N. York Bot. Gard. **1**: 372 (1900).
L. ciliata, Piper & Beattie, Fl. Palouse Reg. 170 (1901), not Muhlenberg.

Western North America: from British Columbia to Oregon, Utah, Wyoming and Montana (Gray, Watson!

Macoun, Sargent, M. E. Jones, Sandberg, Piper, et al.). — Rarely cultivated (Darmstadt).

L. ebractulata can hardly be considered specifically distinct: its characters are even too inconstant to distinguish it as a variety.

26. **L. Mexicana**, comb. nov.

Xylosteum Mexicanum, Humboldt, Bonpland & Kunth, Nov. Gen. Am. **3**: 332 [426]. *pl. 298* (1818).
L. gibbosa, "Willdenow", Roemer & Schultes, Syst. Veg. **5**: 257 (1819). — De Candolle, Prodr. **4**: 336 (1830). — Hemsley, Bot. Biol. Cent. Am. **2**: 5 (1881).
Caprifolium Mexicanum, Kuntze, Rev. Gen. Plant. **1**: 274 (1891).

Mexico: (Humboldt! Ehrenberg, Karwinski, C. L. Smith).

It varies with the branches and peduncles pilose or glabrous.

27. L. GRACILIPES, Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865–66); Prol. Fl. Jap. 158 (1866–67); Versl. Mededeel. Akad. Weten. **2²**: 85 (1867). — Franchet & Savatier, Enum. Pl. Jap. **1**: 205 (1875); **2**: 388 (1879). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 49; Mél. Biol. **10**: 76 (1877). — Zabel, Gartenfl. **30**: 368 (1881). — Dippel, Handb. Laubholzk. **1**: 257. *f. 170* (1889). — Koehne, D. Dendr. 545 (1893). — Sargent, Gard. & For. **10**: 266. *f. 34* (1897).

Caprifolium uniflorum, Siebold, ex Miquel, *l. c.* (herb. Berlin!).
L. uniflora, Blume, ex Miquel, *l. c.* (herb. Berlin!).
Xylosteum Philomelae [phylomaelae], Jacob-Makoy, Belg. Hort. **16**: 270 (1866).
L. Philomelae [*Phylomelae*], Carrière, Rev. Hort. **1872**: 160 (1872).
? *Symphoricarpus puniceus*, K. Koch, Dendr. **2¹**: 50 (1872).
L. Japonica, hort., ex Dippel, *l. c.*
Caprifolium gracilipes, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Japan: Hondo (Siebold! Maximowicz, Buerger, Bisset, Maries, Faurie); Kiu-shiu (ex Maximowicz, *l. c.*).

Often cultivated for its early flowers and handsome fruits, but only in its glabrous variety (Arnold Arboretum, etc.).

The following varieties and forms have been distinguished: —

A. Ovaries glabrous.

B. Leaves pubescent and ciliate.

Typical form.

BB. Leaves glabrous.

var. GLABRA, Miquel, Ann. Mus. Lugd. Bat. **2**: 271 (1865–66); Prol. Fl. Jap. 159 (1866–67). — Franchet & Savatier, Enum. Pl. Jap. **2**: 388 (1879).

f. ALBIFLORA, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 49; Mél. Biol. **10**: 76 (1877).

I have seen no specimens of this form, but suppose that it is a white-flowered form of the preceding variety.

AA. Ovaries glandular; corolla pilose; leaves pubescent.

var. GLANDULOSA, Maximowicz, *l. c.* **31**: 58; Mél. Biol. **12**: 481 (1886.)

Hondo (Maximowicz! Vidal, Maries, Makino, Matsumura).

A form with yellow fruits is mentioned under the name *L. gracilipes fructu luteo* in Cat. Sem. Hort. Bot. Tokyens. Coll. **1902**. p. 12.

Subsect. 4. **Coeruleae**, subsect nov.

This group contains only one polymorphous circumpolar species which shows relations to the preceding group, especially to *L. gracilipes*, and to the Chlamydocarpi and Vesicariae. To *L. gracilipes* it is similar in the shape of the winter buds, in its general habit and in the tendency to produce stipules on vigorous shoots. By the same charac-

ters it is connected with *L. Iberica* and other species of the two subsections named above which besides resemble it strongly in the shape of the cupula, but differ by the two-lipped corolla and the three-celled ovary. The cupula, however, differs markedly in these three groups: in the Chlamydocarpi it does not grow with the ovaries and surrounds the berries at maturity only at the base, while in the two other groups it grows with the ovaries into a fruit consisting seemingly of two wholly connate ovaries, but in the Vesicariae the cupula is connate at the top with the base of the calyx and the fruit is rather dry, in the Coeruleae on the other hand, the margin of the cupula is free and the blue fruit is juicy. It is remarkable that the true nature of the fruit of *L. coerulea*, the most widely distributed species of the genus, has not been revealed until quite recently and that the fruit should have been considered by all botanists as consisting of two connate ovaries. As far as I know E. Koehne* was the first who drew attention to the fact that the fruit of *L. coerulea* really consisted of two free ovaries tightly inclosed by a cupula. Maximowicz, though he discovered the true character of the seemingly connate ovaries in a Japanese form of *L. coerulea*, did not recognize its relation to this species, but described it as new under the name *L. emphyllocalyx*.

28. L. COERULEA, Linné, Spec. Pl. **1**: 174 (1753). — Jacquin, Fl. Austr. Ic. **5**: 35. *pl. 17.* (1778). — Pallas, Fl. Ross. **1**[1]: 58. *pl. 37* (1789). — Schmidt, Oester. Baumz. **2**: 61. *pl. 114* (1794). — Loiseleur-Deslongchamps in Duhamel, Trait. Arb. ed. 2. **1**: 54. *pl. 17* (1801). — Persoon, Syn. Pl. **1**: 213 (1805). — Guimpel, Abb. Deutsch. Holzg. **1**: 20. *pl. 11* (1815). — Sims, Bot. Mag. **45**. *pl. 1965* (1818). — Ledebour,

* D. Dendr. 545. *f. 96K* (1893) — Engler & Prantl, Nat. Pflanzenfam. IV. 4: 167. *f. 57E* (1891).

Fl. Alt. **1**: 247 (1829); Fl. Ross. **2**: 390 (1844). — De Candolle, Prodr. **4**: 337 (1830). — Loudon, Arb. Frut. Brit. **2**: 1057. *f. 823, 824* (1838). — Turczaninow, Bull. Soc. Nat. Mosc. **18**: 305 (1845). — Kirillow, Lonic. Russ. Reich. 51 (1849). — Grenier & Godron, Fl. France **2**: 12 (1850). — Maximowicz, Prim. Fl. Amur. 139 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 48; Mél. Biol. **10**: 75 (1877). — Pokorny, Oester. Holzpfl. 161. *pl. 30. f. 523–526* (1864). — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 204. *pl. 3. f. 1–3* (1864). — Trautvetter, Bull. Soc. Nat. Mosc. **39**[1]: 331 (1866). — K. Koch, Dendr. **2**[1]: 30 (1872). — Dippel, Handb. Laubholzk. **1**: 264. *f. 176* (1889). — Fritsch in Engler & Prantl, Nat. Planzenf. IV. 4: 167. *f. 57E* (1891). — Koehne, D. Dendr. 545. *f. 96K* (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 13. *pl. 13. f. 4–6* (1898). — Bubani, Fl. Pyren. **2**: 331 (1900). — Penkowsky, Derev. Kust. Ross. **3**: 17 (1901). — Schneider, Dendr. Winterstud. 203. *f. 203* (1903).

L. Pyrenaica, Pallas, Reise Russ. Reich. **2**: 568 (1773), nom. nud., not Linné — Georgi, Geogr. Beschr. Russ. Reich. **3**: 779 (1800).

Caprifolium coeruleum, Lamarck, Fl. Franç. **3**: 366 (1778). — Kuntze, Rev. Gen. Plant. **1**: 274 (1891). — Greene, Fl. Francisc. 346 (1892).

L. Altaica, Pallas, Fl. Ross. **1**[1]. *pl. 37* (1789).

Chamaecerasus coerulea, Delarbre, Fl. d'Auvergne. ed. 2. 131 (1800).

Xylosteum coeruleum, Dumont de Courset, Bot. Cult. **2**: 575 (1802). — Spach, Hist. Nat. Vég. **8**: 356 (1839).

Isika coerulea, Borkhausen, Handb. Forstbot. **2**: 1682 (1803). — Roehling, Deutschl. Fl. ed. 2. **2**: 176 (1812).

Euchylia coerulea, Dulac, Fl. Haut.-Pyrén. 463 (1867).

North America: south to Pennsylvania, Wisconsin, Wyoming and California. Northern Asia: south to Hondo, Szechuen, Tibet, Turkestan and Asia Minor. North and Middle Europe and mountains of South Europe. (Numerous collectors). — Often cultivated. — *Plate 1. f. 10, 11.*

L. coerulea is the most widely distributed of all Loniceras

and very variable. Many varieties and forms have been distinguished, but they are all connected by intermediate forms and therefore not always easily separated. The following account of them does not pretend to be a definite arrangement nor an entirely satisfactory one.

A. Winter buds more or less spreading and the branches diverging generally at an angle of more than 45°; tube of the generally funnel-form corolla usually longer than limb, mostly pilose without; stipular appendages and accessory buds often present.

B. Leaves glabrous or only pubescent when young; branches glabrous or nearly so, rarely finely tomentulose.

C. Leaves usually slightly pubescent, rather thin.

var. GLABRECENS, Ruprecht, Beitr. Pflanzenk. Russ. Reich. **2**: 37 (1845), nom. nud. — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 205 (1864); *l. c.* **53**[1]: 20 (1878). — Dippel, Handb. Laubholzk. **1**: 265 (1889).

L. coerulea *a*, Turczaninow, Bull. Soc. Nat. Mosc. 18: 305 (1845). — Kirillow, Lonic. Russ. Reich. 53 (1849). — Wolf, Isv. St. Peterb. Lesn. Inst. 3: 14 (1898).

L. coerulea glabriuscula, Regel, Russk. Dendr. 143 (1873).

This variety is usually considered as the type, and common in Europe and western Asia. Here belong the following forms:

f. PRAECOX, Lavallé, Arb. Segrez. 142 (1877), nom. nud. — Dippel, Handb. Laubholzk. **1**: 265 (1889).

L. praecox, hort., ex K. Koch, Dendr. 2[1]**: 30 (1872).**

Low spreading shrub, early leafing; leaves oval to ovate; fruit subglobose.

f. SPHAEROCARPA, Regel, Russk. Dendr. 144 (1873).

With oval fruits.

f. GLOBOSA, Regel, *l. c.*

L. coerulea sphaerocarpa, Dippel, Handb. Laubholzk. 1: 226 (1889), not Regel.

With subglobose fruits.

f. SALICIFOLIA, Dippel, *l. c. f. 177* (1889).

Leaves oblong to lanceolate. As I have seen no specimens of this form and Dippel's description is insufficient, it seems doubtful whether it belongs here.

f. STIPULIGERA, Sommier, N. Giorn. Bot. Ital. **22**: 217 (1890).

Characterized by well developed stipular appendages.

var DEPENDENS, "Regel" Dippel, Handb. Laubholzk. **1**: 265 (1889). — Regel, Ind. Sem. Hort. Petrop. **1891–2**: 17 (1892). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 15 (1898).

Spreading shrub with reddish-brown slender branches, small leaves, 1.5–3 cm. long, setosely ciliate and slightly pubescent at first, and rather small slender flowers.

Turkestan (Regel!). — Sometimes cultivated, as are the two following forms (Arnold Arboretum, Muenden, etc.).

The two following forms seem to be closely allied, they differ by more upright growth and brighter reddish-brown branches; the first has the branches more brightly colored, and longer bluish-green leaves, the second has brighter green leaves and less slender flowers. Both forms were probably introduced from Turkestan.

f. GRACILIFLORA, Dippel, Handb. Laubholzk. **1**: 266 (1889).

L. Karelini, hort., ex Dippel, *l. c.*, not Bunge.

f. VIRIDIFOLIA, Dippel, *l. c.*

L. Kirilowi, hort., ex Dippel, *l. c.*

L. coerulea Kirilowi, Hansen, Bull. 72 U. S. Exp. Sta. S. Dakota. 130 (1901).

L. coerulea parvifolia, "Dippel" Zabel, in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 463 (1903).

var. ANGUSTIFOLIA, Regel, Russk. Dendr. 144 (1873).

Young branches covered with a minute velvety pubescence; leaves oblong to oblong-lanceolate, finely pubescent when young; flowers slightly pilose, small; cupula at the top often less tightly appressed to the calyx and sometimes (in cultivated plants) partly divided into two large bractlets.

Turkestan: Koltun (Regel); Tskander-Kul (Komarov). — Sometimes cultivated (Arnold Arboretum).

CC. Leaves glabrous, not ciliate, rarely slightly puberulous beneath when unfolding, oval, obtuse, rather firm and distinctly reticulate beneath at maturity; corolla glabrous.

var. **venulosa**, comb. nov.

L. reticulata, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 40; Mél. Biol. **10**: 63 (1877), not Champion.
L. venulosa, Maximowicz, *l. c.* **26**: 542; Mél. Biol. **10**: 741 (1880).
L. reticulata, Borbás, Erdeszeti Lapok **16**: 164 (1882); Oester. Bot. Zeitschr. **32**: 136 (1882).
Caprifolium Borbasianum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Caprifolium venulosum, Kuntze, *l. c.*
L. coerulea reticulata, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 463 (1903).

Japan: Hondo (Tschonoski!). South Europe: Croatia (ex Borbás).

I have seen no specimens from Croatia, but according to Borbás' description the Croatian form seems to be the same as the Japanese plant, which is hardly specifically distinct from *L. coerulea*.

BB. Leaves and branches more or less hirsute and pubescent.
C. Leaves usually elliptic; stamens usually not exceeding the corolla; fruit subglobose.

var. ALTAICA, Sweet, Hort. Brit. ed. 2. 258 (1830), nom. nud. — Dippel, Handb. Laubholzk. **1**: 265 (1889).

L. Altaica, Pallas, Fl. Ross. *pl. 37* (1789), in part. — De Candolle, Prodr. **4**: 337 (1830).

L. Pallasi, Ledebour, Ind. Sem. Hort. Dorp. 1821, apx. **1**: 20, ex Flor. Alt. **1**: 247 (1829); Ic. Pl. Fl. Ross. **2**: 12. *pl. 131* (1830).
L. coerulea, β, Turczaninow, Bull. Soc. Nat. Mosc. **18**: 305 (1845). — Kirillow, Lonic. Russ. Reich. 53 (1849). — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 205 (1864).
L. coerulea hirsuta, Regel, Russk. Dendr. 143 (1873). — Penkowsky, Derev. Kust. Ross. **3**: 17 (1901).
L. coerulea villosa, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 48; Mél. Biol. **10**: 75 (1877), not Torrey & Gray. — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 207. *pl. 3. f. 3, b.* (1864); **53**[1]: 21 (1878).
L. coerulea subvillosa, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 463 (1903).
L. coerulea Kamschatica, hort. (hort. Kesselring!).

North Europe and north Asia to Japan (Thedenius, Maximowicz, Potanin, Wright, Buniakowisky, Faurie, et al.).

f. emphyllocalyx, forma nov.

L. emphyllocalyx, Maximowicz, Bull. Acad. Sci. St. Pétersb. **31**: 58; Mél. Biol. **12**: 480 (1886).

Japan: Hondo (Tanaka!).

This differs only by the ovate leaves, truncate or rounded at the base, and the stamens slightly exceeding the corolla; branches densely villous and hirsute.

CC. Leaves usually oblong to lanceolate; stamens exceeding the corolla; fruit ovoid-oblong.

var. EDULIS, Regel, Russk. Dendr. 144 (1873). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 48; Mél. Biol. **10**: 75 (1877). — Herder, Bull. Soc. Nat. Mosc. **53**[1]: 21 (1878).

L. coerulea γ, Turczaninow, Bull. Soc. Nat. Mosc. **18**: 306 (1845). — Kirillow, Lonic. Russ. Reich. 54 (1849). — Herder, Bull. Soc. Nat Mosc. **37**[1]: 205. *pl. 3. f. 1-2, a* (1864).
L. edulis, Turczaninow, mscr., ex Turczaninow, *l. c.*

Siberia: Songaria to Mandshuria and Dahuria (Turczaninow! Maximowicz). Tibet (Gilles).

var. TANGUTICA, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 48; Mél. Biol. **10**: 75 (1877). — Herder, Bull. Soc. Nat. Mosc, **53**[1]: 25 (1878).

China: Kansu (Przewalski!).

Differs from the preceding chiefly in the lanceolate leaves, the smaller flowers about 8 mm. long, viscid, villous and greenish, and in the anthers but partly exceeding the corolla.

AA. Winter buds upright and the branches generally spreading at an angle of less than 45°; corolla usually campanulate and glabrous, tube as long as or shorter than limb; fruit subglobose; accessory buds and stipular appendages wanting.

var. VILLOSA, Torrey & Gray, Fl. N. Am. **2**: 9 (1841), emend. — Dippel, Handb. Laubholzk. **1**: 265 (1889), in part.

Xylosteum villosum, Michaux, Fl. Bor. Am. **1**: 106 (1803). — Bigelow, Fl. Bost. ed. 2. 88 (1840). — Howell, Fl. N. W. Am. **1**: 282 (1900).
L. villosa, Muhlenberg, Cat. Pl. Am. Sept. 23 (1813). — Roemer & Schultes, Syst. Veg. **5**: 256 (1819). — Sprengel, Syst. Veg. **1**: 759 (1825). — De Candolle, Prodr. **4**: 337 (1830). — Zabel, Gartenfl. **38**: 525 (1889). — Mottet, Rev. Hort. **1900**: 695 (1900).
Xylosteum Solonis, Eaton, Man. Bot. N. Am. 26 (1817).
L. Solonis, Sprengel, Syst. Veg. **1**: 759 (1825), in part.
L. velutina, De Candolle, Prodr. **4**: 337 (1830).
L. coerulea, Hooker, Fl. Bor.-Am. **1**: 283 (1834). — Torrey & Gray, Fl. N. Am. **2**: 9 (1841). — Torrey, Fl. N. York **1**: 299 (1843). — Gray, Man. Bot. N. U. S. 172 (1848); Bot. Calif. **1**: 281 (1876); Syn. Fl. N. Am. **1**[2]: 15 (1884). — Britton & Brown, Ill. Flor. N. Stat. Can. **3**: 240. *f. 3463* (1898).
L. coerulea Canadensis, "Lamarck" Delamare, Renauld & Cardot, Ann. Soc. Bot. Lyon **15**: 85; Flor. Miquelon. 21 (1887).

North America: from Newfoundland and Labrador to Alaska, south to Pennsylvania, Wisconsin and California (numerous collectors).

Though the American forms often resemble the Asiatic ones very much in the pubescence and in the outline of the leaves, the differences in the shape of the corolla, the position of the winter buds together with the mode of

branching and the absence of stipular appendages and accessory buds seem to afford reliable characters to distinguish them as varieties. The *L. coerulea* from western North America, however, approaches the Asiatic plant by the more slender and pilose corolla. In regard to the pubescence the American plant seems nearly as variable as that of the Old World.

Subsect. 5. **Cerasinae**, subsect. nov.

This subsection contains but a single species from Japan which shows no close affinity to any other *Lonicera*. In the shape of the flower, the glabrous style and the mode of flowering it exhibits some affinity to the Fragrantissimae; by its adult foliage, the fruit and the large seeds it resembles the Alpigenae of which at least one species, *L. Hemsleyana*, has a similar cupula, but the 2-celled ovary brings it near the Purpurascentes, though this seems not to be the most satisfactory arrangement, except that the species resembles in general aspect and the winter buds the *L. gynochlamydea* of the following subsection. *L. cerasina* is a rather robust shrub, almost glabrous, with oblong-ovate or elliptic-lanceolate, acuminate, ciliate leaves to 10 cm. long; flowers two-lipped, yellowish-white, scarcely 1 cm. long, glabrous outside, appearing before or with the leaves; filaments and style glabrous; bracts linear, ciliate, as long as the partly connate 2-celled ovaries; bractlets connate into a four-lobed cupula about half as long as the ovaries.

29. L. CERASINA Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 41; Mél. Biol. **10**: 64 (1877).

Caprifolium cerasinum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Japan: Hondo (Maximowicz!); Kiu-shiu, Nanokawa Tosa (Watanabe). — *Plate 9*.

Watanabe's specimen differs from the type by the fully developed leaves and the short filaments, the stamens being

about only half as long as the limb, while in the type they are almost as long with the filaments much longer than the anthers.

Subsect. 6. **Pileatae**, subsect. nov.

Three species from India and central and southwestern China, chiefly characterized by the cup-like emergence of the calyx and the cupula tightly enclosing the ovaries. From the following subsection this group differs in the cap-like emergence of the calyx, the winter buds consisting of several pairs of scales and by the position of the flowers which are borne generally in the axils of the middle leaves of the branches. The species are low or medium-sized, slender-branched shrubs, nearly glabrous, except the leaves being usually ciliate and the branches puberulous; flowers small, short-peduncled, with almost regular or indistinctly two-lipped limb and distinctly gibbous tube, pubescent without; style pilose; ovaries 3-celled, distinct, with distinctly toothed calyx; cells with 2–3 ovules; fruit red.

A. Leaves ovate-lanceolate to lanceolate, acuminate, 5–10 cm. long; corolla two-lipped, tube wide, saccate, shorter than limb, lower lip more or less reflexed; style shorter than stamens, pubescent to the apex. 30. ***L. gynochlamydea*, Hemsl.**

AA. Leaves suborbicular to lanceolate, 0.5–6 cm. long; style exceeding the corolla, tube rather slender, longer than limb.

B. Leaves ovate-lanceolate to lanceolate, acuminate, acutish, 2.5–6 cm. long, leathery, shining above; corolla indistinctly two-lipped or with unequal spreading lobes little shorter than the prominently gibbous tube; filaments shorter than corolla or as long. 31. ***L. ligustrina*, Wall.**

BB. Leaves suborbicular to oblong-lanceolate, obtuse, 0.5–2.5 cm. long; corolla with almost equal upright limb about one-third as long as the gibbous tube; stamens exceeding the corolla, about as long as style. 32. ***L. pileata*, Oliv.**

30. L. GYNOCHLAMYDEA, Hemsley, Jour. Linn. Soc. **23**: 362 (1888).

Caprifolium gynochlamydeum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Hupeh (Henry! E. H. Wilson, no. 628); Szechuen (Farges, nos. 87, 746, 1124, A. v. Rosthorn, no. 919).

31. L. LIGUSTRINA, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**:179 (1824); Cat. no. 479 (1828). — De Candolle, Prodr. **4**:334 (1830). — Wight & Arnott, Prodr. Fl. Ind. Or. **1**:389 (1834). — Wight, Ic. Pl. Ind. Or. **3**:14. *pl. 1025* (1847); Spic. Neilgherr. **1**:76. *pl. 91* (1846–51); Ill. Ind. Bot. **2**:72. *pl. 121, B, 3* (1850). — Hooker f. & Thomson, Jour. Linn. Soc. **2**:166 (1858). — Beddome, Fl. Sylv. S. Ind. **2**. anal. gen. 124. *pl. 15. f. 5* (1874). — Clarke in Hooker, Fl. Brit. Ind. **3**:12 (1882). — Fritsch in Engler & Prantl, Nat. Planzenfam. IV. 4:167. *f. 57, F–I* (1891).

***Xylosteum ligustrinum*, D. Don, Fl. Nepal. 140 (1825).**
Xylosteum Naisoca*, Hamilton, mscr., ex D. Don, *l. c.
***L. Wightiana*, Wallich, Cat. no. 1520 (1828).**
***Caprifolium ligustrinum*, Kuntze, Rev. Gen. Pl. 1:274 (1891).**

East India: from the Nilghiris to the Kashia Mountains (Hooker, Thomson, Wight, Clarke). China: Hupeh (E. H. Wilson, no. 471). — In India cultivated as a hedge-plant (ex Wight).

32. L. PILEATA, Oliver in Hooker, Ic. Pl. **16**. *pl. 1585* (1887). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 365 (1888).

***Caprifolium pileatum*, Kuntze, Rev. Gen. Pl. 1:274 (1891).**
***L. ligustrina pileata*, Franchet, Jour. de Bot. 10:317 (1896).**

China: Hupeh (Henry, E. H. Wilson, no. 30); Szechuen (Henry, Farges, Pratt); Yunnan (Henry, nos. 11800, 11800A, Pratt). — Rarely cultivated (Kew, ex Hand-l. Arb. Kew).

f. **Yunnanensis**, comb. nov.

L. ligustrina Yunnanensis, Franchet, Jour. de Bot. **10**: 317 (1896).

China: Yunnan (Delavay, no. 4867!).

Differs only in the very small suborbicular to broadly ovate, thickish leaves.

Subsect. 7. Vesicariae, Komar.

Lonicera § *Vesicaria*, Komarov, Act. Hort. Petrop. **18**:427 (1901).

This small group contains only two closely allied species from northwestern China, Mongolia and Korea. They are remarkably distinct from all other Loniceras by the close union of the cupula with the ovaries; the upper margin of the pubescent cupula is adnate all around to the base of the two calices and grows with the otherwise distinct ovaries into a rather dry accessory collective fruit. The only other case of a similar pseudocarp in the genus is that of *L. coerulea*, but in that species the cupula remains free at the apex and is merely tightly appressed to the berries. If in all other respects the Vesicariae did not show such a close affinity to *L. Iberica*, the peculiar structure of the fruit could be considered a sufficient character to found a distinct subgenus or even a genus upon them. The two species are robust shrubs with rather stout branches furnished with hispid or setose hairs; leaves generally ovate, broad at the base, and on vigorous shoots often lobed; winter buds with two outer scales, rather large; stipular appendages often present on vigorous branches; flowers short-peduncled, appearing in the axils of the upper leaves which become smaller and sometimes bract-like toward the top of the branch; bracts large and leaf-like; calyx distinctly 5-toothed; corolla two-lipped with short gibbous tube, yellowish, hirsute without; style pubescent; ovaries 3-celled, cells with 4-6 ovules.

A. Leaves ovate to oblong-ovate, acuminate, 5–10 cm. long, ciliate and hirsute along the midrib beneath; bracts oblong to oblong-lanceolate; ovaries sometimes three in one common cupula; flower unknown. **33. *L. vesicaria*, Komar.**

AA. Leaves ovate, rounded or subcordate at the base, acuminate, sparingly appressed-pilose on both sides and setosely ciliate, 2–4 cm. long; bracts ovate and contracted into a short stalk or lanceolate; corolla 2 cm. long; stamens and style about as long as corolla. 34. *L. Ferdinandi*, Franch.

33. L. VESICARIA, Komarov, Act. Hort. Petrop. **18**: 427 (1900).

Korea (Komarov!).— *Plate 1. f. 12, 13. Plate 10.*

34. L. FERDINANDI, Franchet, Nouv. Arch. Mus. Paris II. **6**: 31. *pl. 12, f. A.* (1883); Pl. David. **1**: 151 *pl. 12, f. A.* (1884). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 361 (1888).

***Caprifolium Ferdinandi*, Kuntze, Rev. Gen. Pl. 1**: 274 (1891).

Mongolia (David, nos. 2624! 2691). China: Kansu (Potanin); Shensi (Giraldi); Hupeh (Henry).

Subsect. 8. CHLAMYDOCARPI, Jaub. & Spach.

Lonicera § *Chlamydocarpus*, Jaubert & Spach, Ill. Pl. Or. **1**: 137 (1847).—K. Koch, Linnaea **24**: 478 (1851); Hort. Dendr. **1**: 297 (1853); Dendr. **2**[1]: 36 (1872).

Three species from western Asia, distributed from Transcaucasia through Persia to Kashmir, Beluchistan and Arabia. They are closely related to the preceding group, but distinguished by the cupula being free at the top; the ovaries outgrow the cupula and become fleshy bright red berries at maturity. In all other respects the Chlamydocarpi are similar to the Vesicariae and also show the tendency on vigorous branches to develop stipular appendages and sometimes lobed leaves.

A. Cupula contracted at the apex, urceolate; bracts leaf-like, broad, much exceeding the ovaries; leaves orbicular-ovate to ovate, obtuse, rounded or subcordate at the base, pubescent on both sides and ciliate, 2.5–4 cm. long. 35. *L. Iberica*, Marsch. Bieb.

AA. Cupula not contracted at the apex, cup-shaped; bracts narrow, little or not exceeding the ovaries; leaves rounded or narrowed at the base, not ciliate, glaucous beneath, the upper floriferous ones often bract-like.

B. Branches hirsute and glandular; leaves ovate, pubescent beneath, 1–2 cm. long;corolla distinctly gibbous at the base.
36. *L. hypoleuca*, Decsne.

BB. Branches glabrous or puberulous; leaves ovate or oval, glabrous or minutely puberulous, 7–20 mm. long; corolla with slender, slightly gibbous tube. 37. *L. Aucheri*, Jaub. & Spach.

35. L. IBERICA, Marschall von Bieberstein, Fl. Taur.-Cauc. **1**: 158 (1808); Cent. Pl. Rar. Ross. **1**. *pl. 13* (1810), ex Ledebour, Flor. Ross. **2**: 391. — Roemer & Schultes, Syst. Veg. **5**: 257 (1819). — De Candolle, Prodr. **4**: 337 (1830). — Ledebour, Flor. Ross. **2**: 391 (1844). — Kirillow, Lonic. Russ. Reich. 49 (1849). — K. Koch, Dendr. **2**[1]: 36 (1872). — Boissier, Fl. Or. **3**: 6 (1875). — Dippel, Handb. Laubholzk. **1**: 238 (1889). — Fritsch in Engler & Prantl. Nat. Pflanzenfam. IV. 4: 167, *f. 57, D* (1891). — Koehne, D. Dendr. 552. *f. 69, G–I* (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 21. *pl. 5. f. 10–12. pl. 13. f. 7* (1898). — Penkowsky, Derev. Kust. Ross. **3**: 11 (1901).

L. alpigena, Gueldenstaedt, Reis. Russl. **1**: 429 (1787), ex Ledebour. — Pallas, Fl. Ross. **1**: 57 (1784). — Georgi, Geogr. Beschr. Russ. Reich. **3**: 780 (1800).

Xylosteum Ibericum, Fischer, Cat. Jard. Gorenki. ed. 2. 44 (1812), nom. nud.

Chamaecerasus Iberica, Billiard, L'Hort. Franç. **1861**: 256 (1861).

? *L. pubens*, Lavallé, Arb. Segrez. 141 (1877).

L. Aucheri, hort., ex Lavallé, *l. c.* (hort. Jena!).

Caprifolium Ibericum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

L. ciliaris, hort., ex Hand-list. Arb. Kew **2**: 17 (1896).

Western Asia: Transcaucasia (Steven, K. Koch, Kusnezoff); North Persia (Kotschy, Szovitz). — Sometimes cultivated (Arnold Arboretum, etc.).

The following forms have been distinguished: —

f. MICROPHYLLA, Kotschy in herb.! — Dippel, Handb. Laubholzk. **2**:238 (1889).

f. ERECTA, Dippel, *l. c.*

f. CHLAMYDOPHORA, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 459 (1903).

L. chlamydophora, K. Koch, Linnaea **24**:478 (1851); Dendr. **2**[1]:36 (1872).

The first two forms have smaller leaves than the type; the first one is of low and spreading, the second of more upright habit; the third differs in its earlier flowers, larger fruits and less grayish leaves.

36. L. HYPOLEUCA, Decaisne in Jacquemont, Voy. dans l'Inde **4**:81. *pl. 89* (1843). — Walpers, Rep. Bot. **2**:449 (1843); **6**:7 (1847). — Hooker f. & Thomson, Jour. Linn. Soc. **2**:170 (1858). — Brandis, For. Fl. 256 (1874). — Clarke in Hooker, Fl. Brit. Ind. **3**:14 (1882).

L. elliptica, Royle, Ill. Bot. Him. **1**:236 (1839), nom. nud. (herb. Kew!).
L. bicolor, Klotzsch in Garcke, Reis. Prinz Waldemar 84. *pl. 71* (1862).
Caprifolium hypoleucum, Kuntze, Rev. Gen. Pl. **1**:274 (1891).

Himalaya: Kashmir (Jacquemont! Edgeworth, Royle, Thomson, Duthie). Beluchistan (Lace).

37. L. AUCHERI, Jaubert & Spach, Ill. Plant. Or. **1**:137. *pl. 73* (1847). — Walpers, Rep. Bot. **6**:6 (1847). — Boissier, Fl. Or. **3**:6 (1875).

L. aurea, Aucher-Eloy, ex Hooker f. & Thqmson, Jour. Linn. Soc. **2**:170 (1859) (in herb. Paris!).
Caprifolium Aucheri, Kuntze, Rev. Gen. Pl. **1**:274 (1891).

Arabia (Aucher-Eloy!). South Persia (Haussknecht, ex Boissier).

Subsect. 9. **Fragrantissimae**, subsect. nov.

Lonicera § *Ebracteolatae*, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 460 (1903) excl. his species nos. 61–65.

A small group of four species, all Chinese and apparently not very widely distributed, nearest related to the following group from which it is chiefly distinguished by the partly connate ovaries and the shape of the corolla. Upright shrubs; the branches furnished with setose reflexed hairs or glabrous; winter buds rather large with two outer scales; terminal bud abortive, replaced by two axillary ones; leaves setosely ciliate, leathery, often subpersistent; flowers appearing before or with the leaves in the axils of the lowest leaves or of the basal bracts of the branches, fragrant; peduncles short, bracts lanceolate, usually longer than the ovaries; bractlets indistinct, adnate to the base of the ovary or obsolete; calyx short, indistinctly toothed; corolla two-lipped with distinctly gibbous tube; filaments and style glabrous; fruit scarlet, partly or wholly connate.

A. Ovaries glabrous, connate about one-half; leaves elliptic to lanceolate, 3–12 cm. long.

B. Branches with reflexed bristles; leaves usually appressed setose on both sides, oblong-lanceolate to narrow lanceolate, acuminate, 5–12 cm. long; corolla usually pilose outside.

38. *L. Standishii*, Carr.

BB. Branches glabrous; leaves 3–6 cm. long.

C. Leaves elliptic to oval, acute, glabrous, except the ciliate margin; corolla glabrous outside.

39. *L. fragrantissima*, Lindl. & Paxt.

CC. Leaves elliptic to ovate-elliptic, acuminate, finely grayish-pubescent beneath, ciliate; flowers unknown.

40. *L. phyllocarpa*, Maxim.

AA. Ovaries setose, almost wholly connate; leaves broadly obovate or broadly oval, obtuse and mucronate, 1.5–2 cm. long; flowers unknown.

41. *L. mucronata*, Rehd.

38. L. Standishii, Carrière, Fl. Serr. **13**: 63 (1858). — Hooker, Bot. Mag. **94**. *pl. 5709* (1868). — K. Koch, Dendr. **2**[1]: 20 (1872). — Carrière, Rev. Hort. **1873**: 148. *f. 15* (1873). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 42; Mél. Biol. **10**: 65 (1877). — Gard. Chron. II. **9**: 107. *f. 20* (1878). — Forbes &

Hemsley, Jour. Linn. Soc. **23**: 367 (1888). — Dippel, Gartenfl. **35**: 682. *f. 86* (1886); Handb. Laubholzk. 1: 225. *f. 143* (1889). — Koehne, D. Dendr. 547 (1893).

Chamaecerasus Standishii, Lescuyer, L'Hort. Franç. **1862**: 138. *pl. 10* (1862).
L. Fortunei, *L. fragrans* and *L. odoratissima*, hort., ex Koch, *l. c.*
L. Sinensis, hort., ex Dippel, *l. c.*
Caprifolium Standishii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Hupeh (Henry); Szechuen (Potanin). — Cultivated, like the following species, chiefly for its very early, fragrant flowers and for its handsome half-evergreen foliage (Goettingen, Kew, etc.).

The wild specimens have the leaves generally much narrower than the cultivated ones, sometimes narrowly lanceolate, about 10 cm. long and 2 cm. broad; this form, to which Dr. Henry's nos. 1290, 3373, 3801, 5119 and 6373 and E. H. Wilson's no. 55 belong, may be distinguished as f. **lancifolia**, f. nov.

39. L. FRAGRANTISSIMA, Lindley & Paxton, Paxton's Flow. Gard. **3**: 75. *f. 268* (1852). — Lemaire, Jard. Fleur. **3**: 84. *f.* (1853). — Carrière, Fl. Serr. **13**: 63 (1858); Rev. Hort. **1873**: 169. *f. 17* (1873). — K. Koch, Dendr. **2**[1]: 21 (1872). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 42; Mél. Biol. **10**: 66 (1877). — Gard. Chron. II. **9**: 107. *f. 19, 21* (1878). — Dippel, Gartenfl. **35**: 684. *f. 87* (1886); Handb. Laubholzk. **1**: 226. *f. 144* (1889). — Koehne, D. Dendr. 546 (1893).

L. caprifolioides, K. Koch, Ind. Sem. Berol. **1871**. apx. 3 (1871), ex Urban, Enum. Spec. Cat. Sem. Hort. Bot. 30; Dendr. **2**[1]: 19 (1872). — Vatke, Ind. Sem. Berol. apx. (1875), ex Urban, *l. c.*
L. Niaguarilli, hort., ex Koch, *l. c.*
L. odoratissima and *L. Magnevilleae*, hort., ex Dippel, *l. c.*
Caprifolium fragrantissimum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
L. Volgarensis, *Chamaecerasus Niaguarilli*, and *Caprifolium Niaguarilli* hort., ex Hand-list Arb. Kew 2: 15 (1896)

Caprifolium splendidum, hort., ex Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 461 (1903).

Introduced from China, but known only in the cultivated state (Arnold Arboretum, etc.).

40. L. PHYLLOCARPA, Maximowicz, Prim. Fl. Amur. 138 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 46; Mél. Biol. **10**: 71 (1877), as to the fruiting plant.

Caprifolium phyllocarpum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

North China (Tatarinow!).

This species is known only from specimens collected by Dr. Tatarinow near Pekin. Flowering specimens from the same region referred afterwards by Maximowicz to this species do not belong here, but constitute an apparently new species, *L. Pekinensis*, which is closely allied to *L. Infundibulum* and easily distinguished from *L. phyllocarpa* even without flowers by the distinct ovaries and the winter buds possessing several outer scales. The fruit of *L. phyllocarpa* is probably not black as described by Maximowicz, but seems to have been originally scarlet, darkened by drying. — *Plate 11*.

41. **L. mucronata**, spec. nov.

An apparently small, much-branched, upright shrub; branches slender, gray, finely pubescent when young and furnished with reflexed setose hairs; winter buds small with two outer scales; leaves broadly obovate to broadly oval, 1.5–2 cm. long, obtuse and mucronate, rounded or narrowed at the base into a slender hirsute petiole about 2 mm. long, leathery, slightly recurved at the margin, glabrous and bright green above, glaucescent, reticulate and sparingly appressed-pilose beneath, ciliate, with 2–5 pairs of lateral veins; fruits very short-peduncled, subglobose, consisting of two almost wholly connate ovaries, about 8 mm. in diameter, with 5–10 seeds; bracts subulate, pubescent, about half as long as the fruit; bractlets

none; calyx truncate, ciliate. The fruit is edible according to Dr. Henry. — *Plate 2. f. 8, 9.*

China: Szechuen, S. Wushan (Henry, no. 5519).

Subsect. 10. Bracteatae, Hook. f. & Thoms.

Lonicera § *Bracteatae*, Hooker f. & Thomson, Jour. Linn. Soc. 2: 165 (1858).

About 12 species, all Asiatic, distributed from Japan and Korea to Transcaucasia and south to the Himalayas. They are chiefly characterized by the branches being terminated by two axillary buds, by the distinct ovaries, the large bracts and the want of bractlets. Upright, low or medium-sized shrubs mostly furnished with setose or hispid pubescence; winter buds with only one pair or with several pairs of outer scales, the terminal bud of the branches abortive and replaced by two axillary ones; leaves mostly of firm texture, often setosely ciliate and usually more or less pubescent; flowers white or yellowish-white, appearing shortly before or with the leaves near the base of the young branchlets; bracts, large, usually enveloping the ovaries; bractlets none, except in *L. Elisae;* corolla with almost regular or two-lipped limb, but the lower lip not abruptly reflexed as in the preceding group; stamens and style usually glabrous or the latter sometimes hairy near the base; ovaries always distinct, often glandular and setose; fruit scarlet, but in *L. cyanocarpa* described as blue.

A. Corolla two-lipped, or subregular and with the limb exceeding the tube.

B. Corolla two-lipped, limb as long as or shorter than tube (unknown in no. 45); winter buds pointed, with one pair of outer scales.

C. Peduncles very short; bracts ovate; stamens shorter than the pilose corolla; leaves ovate or oval, acute, 8–20 mm. long, ciliate and sparingly appressed-pilose; dwarf shrub.

42. *L. humilis*, Kar. & Kir.

CC. Peduncles 5–15 mm. long; bracts ovate-oblong to oblong; shrubs with slender branches.

D. Branches more or less pilose and pubescent; leaves ovate to elliptic, acute or obtusish, 1.5–5 cm. long, ciliate, pubescent and pilose, or almost glabrous above; corolla pilose and glandular without, rarely almost glabrous; stamens slightly longer or shorter than corolla.

43. *L. Altmannii*, Reg. & Schmalh.

DD. Branches and petioles glabrous; leaves sparingly pilose or glabrous.

E. Leaves setosely ciliate and often sparingly appressed-pilose, ovate to ovate-lanceolate, acute, 1.5–3 cm. long; corolla glabrous; stamens shorter than limb. 44. *L. Olgae*, Reg. & Schmalh.

EE. Leaves like the whole plant glabrous or occasionally sparingly ciliate, elliptic-ovate to oblong, obtuse, broadly cuneate at the base, 2–3.5 cm. long; bracts ciliate; peduncles about 5 mm. long; flowers unknown.

45. *L. bracteolaris*, Boiss. & Buhse.

BB. Corolla with the almost regular limb much longer than the tube, glabrous within and without, about 15 mm. long; stamens exceeding the corolla; leaves ovate, pubescent on both sides, 4–8 cm. long; flowers appearing before the leaves.

46. *L. praeflorens*, Batal.

AA. Corolla with the almost regular limb shorter than the tube.

B. Stamens included in the tube; corolla 7–12 mm. long; branchlets setose.

C. Corolla setose without and within, 7–8 mm. long; ovaries glandular and setose; leaves usually coarsely dentate, oblong-lanceolate, pubescent on both sides, 4–7 cm. long.

47. *L. setifera*, Franch.

CC. Corolla glabrous without and within, 10–12 mm. long, slightly ventricose at the base; branches with reflexed setose hairs; flowers appearing before the leaves. 48. *L. scabrida*, Franch.

BB. Stamens exceeding the tube; corolla 1.5–4 cm. long, distinctly gibbous at the base.

C. Winter buds with only one pair of outer scales, pointed, usually large; leaves setosely ciliate.

D. Ovaries glabrous; corolla 1.5–2 cm. long; leaves 1.5–3.5 cm. long.

E. Leaves oblong or oblong-ovate, usually narrowed at the base; branchlets glabrous or puberulous and often pilose; calyx glabrous, not ciliate.

F. Leaves oblong, narrowed at the base, 2–3.5 cm. long, finely puberulous beneath and often setose on the veins; fruits dark blue; bracts ovate, acuminate. 49. *L. cyanocarpa*, Franch.

FF. Leaves oblong-ovate to oblong, narrowed or slightly rounded at the base, 1.5–2 cm. long, glabrous or appressed-setose above, sometimes densely pubescent on both sides; corolla glabrous outside or slightly hairy, 1.5–2 cm. long. 50. *L. Semenovii*, Reg.

EE. Leaves ovate to ovate-oblong, obtusish, rounded or subcordate at the base, 2–3 cm. long, pubescent beneath, sometimes appressed setose above; branchlets hispid; calyx setosely ciliate; corolla 1.5-2 cm. long, pilose or glabrous without. 51. *L. asperifolia*, Hook. f. & Thoms.

DD. Ovaries glandular and often setose, rarely glabrous; corolla 2–4 cm. long; leaves 4–8 cm. long.

E. Calyx small and often obsolete; corolla 2–3.5 cm. long; bracts 1.5–2.5 cm. long; leaves broadly elliptic to oblong-ovate, pubescent or nearly glabrous, 4–8 cm. long. 52. *L. hispida*, Pall.

EE. Calyx large, with five broad semi-orbicular lobes, persistent on the fruit, about 1 cm. across; ovaries setose; bracts and corolla 3–4 cm. long; leaves ovate-lanceolate, pubescent on both sides, 5–7 cm. long. 53. *L. stephanocarpa*, Franch.

CC. Winter buds with several pairs of outer scales, obtuse, small; leaves not setosely ciliate; flowers appearing shortly before the leaves; corolla about 2 cm. long.

D. Bractlets wanting.

E. Bracts broadly ovate, rounded at the base; calyx cupulate with broad unequal lobes; ovaries glabrous or setose and glandular; leaves ovate, acuminate, sparingly hirsute on both sides or only beneath on the veins, 5–10 cm. long. 54. *L. strophiophora*, Franch.

EE. Bracts oblong or ovate-lanceolate, rather narrow at the base; calyx as in the preceding species.

F. Ovaries glandular and setose; corolla pilose without; style glabrous; branches of last year rough with small tubercles; leaves (not fully developed) elliptic-ovate to oblong-ovate, acuminate, pubescent on both sides. 55. *L. Pekinensis*, Rehd.

FF. Ovaries glabrous; corolla nearly glabrous without; style hairy about the middle; branches smooth; leaves elliptic-obovate, sparingly pilose on both sides, 8–12 cm. long. 56. *L. Infundibulum*, Franch.

DD. Bractlets ovate-lanceolate, distinct, half as long as the ovaries; ovaries setose; bracts shorter than the fruits; calyx with ovate-lanceolate, acute lobes; branches hispid; leaves ovate, pubescent on both sides, 3–4 cm. long. 57. *L. Elisae*, Franch.

42. L. HUMILIS, Karelin & Kirilow, Bull. Soc. Nat. Mosc. **15**:370 (1842). — Ledebour, Fl. Ross. **2**:388 (1844). — Kirillow, Lonic. Russ. Reich. 19 (1849). — Regel, Bull. Soc. Nat. Mosc. **40**[1]:6 (1867); Act. Hort. Petrop. **5**:610 (1878). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**:16. *pl. 4. f. 6–9* (1898).

Caprifolium humile, Kuntze, Rev. Gen. Pl. **1**:274 (1891).

Turkestan: Kokanian to Alatau Mtns. (Karelin & Kirilow! Regel, Fetissow).

From small-leaved forms of the following species, *L. humilis* may be distinguished by the broader bracts, and also by the sparser pilose pubescence from certain forms of *L. Altmannii Saravshanica*, which sometimes greatly resembles *L. humilis* in habit and shape of foliage.

43. L. ALTMANNII, Regel & Schmalhausen, Act. Hort. Petrop. **5**:610 (1878); **6**:304 (1880). — Regel in Fedtschenko, Putech. Turkest. **3**[18]:41 (1882). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**:17. *pl. 5. f. 1–9* (1898).

L. tenuiflora, Regel & Winkler, Act. Hort. Petrop. **6**:305 (1880).
Caprifolium Altmannii, Kuntze, Rev. Gen. Pl. **1**:274 (1891).
Caprifolium tenuiflorum, Kuntze, *l. c.*
L. Altmannii tenuiflora "Regel f.", Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 460 (1903).

Turkestan: (Regel! Fetissow, Komarov, Buniakowisky). — Rarely cultivated (Arnold Arboretum).

L. Altmannii is exceedingly variable in the pubescence, the size and shape of the foliage and also in the relative length of tube and limb of the corolla. There are forms which approach *L. humilis*, while others are similar to *L.*

Olgae, so that these three Loniceras, with *L. bracteolaris*, form a group of very closely allied species. *L. tenuiflora* appears not to be specifically different from typical *L. Altmannii*, since the distinguishing characters given by Regel are not even present in the type specimens which show a distinctly gibbous corolla and oblong anthers, but are not "tubo aequali, antheris latioribus quam latis." * The following varieties can be distinguished:—

A. Leaves villous or pilose above and pubescent or tomentose beneath.

B. Leaves pubescent beneath, usually ovate, 2–4 cm. long; ovaries often pilose and glandular at the apex.

Typical form.

Alatau Mtns.: "Chanachai"! "Fl. Koksu"! "Juldus, Taldy", "Fl. Sarybulak", "Bach Nilki, Kasch", "Link. Naryn-Ufer" (Regel!)

BB. Leaves densely grayish tomentose beneath, 1.5-2.5 cm. long, broadly ovate to oval, often obtusish; ovaries glabrous; corolla only slightly pilose, or glabrous; branchlets finely pubescent, not or but sparingly hirsute, or glabrous.

var. Saravshanica, var. nov.

Saravshan (Komarov, Regel); W. Bokhara (Lipsky).

This is a very distinct variety chiefly characterized by the dense grayish tomentum of the under side of the leaves and their smallness. As types of it I consider besides Lipsky's specimens the following specimens of Komarov: "Kulu-Kolan", "Margusar-Kul", "Kara Kul", "pr. pagum Schink", "Pinchon, 1893".

AA. Leaves hirsute or pilose on both sides or nearly glabrous.

B. Branches and petioles densely setosely hispid; leaves hirsute on both sides, usually broadly ovate, 3–5 cm. long; ovaries often pilose.

*** Probably a misprint for either "longioribus quam latis" or "latioribus quam longis." Wolf, l. c., translates it "with broader anthers."**

var. hirtipes, var. nov.

L. hirtipes, Bunge, mscr., ex Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 11. *pl. 11. f. 4* (1898).
L. hispidissima, Regel, ex Wolf., *l. c.*

Alatau Mtns.: "Almatinka pr. Wernoje" (Regel); Saravshan "Tak-Fon" (Komarov).

I have not seen Bunge's specimen, but Wolf's figure and Komarov's specimen, determined as *L. hirtipes* probably after comparison with the type, leave hardly any doubt about this form, which certainly does not belong to *L. hispida* where Wolf places it, since the shape of its winter buds and other characters do not agree with that species but very well with *L. Altmannii*.

BB. Branchlets and petioles puberulous and sparingly hirsute, often glandular; leaves sparingly pilose above and sparingly pilose and sometimes puberulous on the veins beneath or almost glabrous, ovate or oval, 2–4 cm. long; corolla sparingly pilose or glabrous; ovaries glabrous.

var. pilosiuscula, var. nov.

Alatau Mtns.: "Nebenschlucht Kisskensen am Talgar" "Kendyr-aus 1880" (Regel), "Naryn minor", "Fl. Kurmekty" "Mt. Alexander" (Fetissow); Saravshan: "Ch-schartol", "Revat" (Komarov). — Rarely cultivated (Arnold Arboretum, etc.).

Regel's specimen from Kendyr-aus differs in its narrower, more acute or even shortly acuminate leaves.

To this variety belong the plants in cultivation which were received at the Arnold Arboretum under the names *L. Altmannii* and *L. tenuiflora* from Mr. M. L. de Vilmorin of Paris and Mr. J. Kesselring of St. Petersburg. The plants received as *L. tenuiflora* differ slightly by slenderer arching branches and the somewhat more glaucous under side of the leaves; they have not yet flowered.

44. L. Olgae, Regel & Schmalhausen in Fedtschenko, Putech. Turkest. **3**[18]: 41 (1882).—Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 15. *pl. 4. f. 1–5* (1898).

Caprifolium Olgae, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Turkestan: (O. Fedtschenko! Regel, Komarov, Lipsky).

L. Olgae is not always easily distinguished from the preceding species; a somewhat doubtful form seems the one collected by Komarov in Saravshan "Kechtut 4000, 1892, v." with puberulous branches and peduncles and sparingly hirsute petioles, but the shape of the setosely ciliate leaves and the glabrous corolla refer it to *L. Olgae*. On the other hand the following species is also closely related to *L. Olgae* and some broad-leaved specimens of the latter collected by Regel and by Komarow in Saravshan differ from *L. bracteolaris* only by their setosely ciliate leaves.

45. L. bracteolaris, Boissier & Buhse, Mém. Soc. Nat. Mosc. II. **12**: 106 (1860). — Boissier, Fl. Or. **3**: 9 (1875).— Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 43 (1898.)

Caprifolium bracteolare, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Transcaucasia (Buhse!).

This species is only known in fruiting specimens collected by Buhse in 1847 and has not been found again in that region. It has been compared with *L. coerulea* by Wolf and by Penkowsky* but has no relation whatever to that species. — *Plate 12.*

46. L. praeflorens, Batalin, Act. Hort. Petrop. **12**: 169 (1892). — Wolf, Gartenfl. **42**: 331 (1893); Isv. St. Peterb. Lesn. **3**: 12. *pl. 3* (1898).

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* Derev. Kust. Ross. **3**: 17 (1901.)

Mandshuria (Jankowski! Maximowicz!). Korea (Carles).

This species is perhaps more closely related to *L. Infundibulum* and *L. Pekinensis* particularly as regards its foliage and winter buds, but in the shape of the corolla it seems closer to *L. Altmannii*. — *Plate 13, 14.*

47. L. SETIFERA, Franchet, Jour. de Bot. **10**: 314 (1896).

China: Yunnan (Delavay, no. 2223!).

The dentation of the leaves in this species is quite regular and seems to be the normal state while in some other Loniceras dentate or lobed leaves occur only occasionally.

48. L. SCABRIDA, Franchet, Nouv. Arch. Mus. Nat. Paris II. **8**: 70; Pl. David. **2**: 70 (1888).

L. scabriuscula, Franchet, Jour. de Bot. **10**: 315 (1896), sphalmate.

Tibet: Mupine (David!).

Franchet's description was drawn only from flowering branches without leaves, but in the herbarium of the Natural History Museum in Paris there is a branch with leaves and young fruits collected by David in eastern Tibet and named by Franchet *L. scabrida*. It seems, however, doubtful whether this branch belongs to this species, since the bracts of the flowers are different from those of the young setose fruits; the latter are broadly ovate, shortly acuminate and about two cm. long; the leaves are oblong, 3.5–5 cm. long, rounded or slightly narrowed at the base, acute, sparingly appressed-setulose above, appressed pubescent beneath especially on the veins and glaucescent and somewhat reticulate. It most resembles *L. hispida chaetocarpa*.

49. L. CYANOCARPA, Franchet, Jour. de Bot. **10**: 314 (1896). — Bois. Jour. Soc. Hort. France IV. **1**: 208 (1900).

China: Yunnan (Delavay, no. 3818!).

It seems doubtful whether the fruit is really blue as it looks in the dried specimen, since in other species of this group I have observed sometimes a change of color from scarlet to bluish after drying.

50. L. SEMENOVII, Regel, Act. Hort. Petrop. **5**: 608 (1878); **6**: 303 (1880). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 12. *pl. 2. f. 3–6. pl. 13. f. 3* (1898).

L. glauca, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 166 (1858), not Hill, in herb. Kew!. — Clarke in Hooker, Fl. Brit. Ind. **3**: 11 (1882). — Buser in Boissier, Fl. Or. Suppl. 278 (1888.)
L. hispida alpina, Regel, Bull. Soc. Nat. Mosc. **40**[1]: 3 (1867).
Caprifolium Semenovii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Caprifolium Thomsonii, Kuntze, *l. c.*

Turkestan (Fedtschenko! Regel, Krassnow). Tibet (Thomson, Schlagintweit). Afghanistan (Aitchison). Himalayas: from Kashmir to Kumaon (Strachey & Winterbottom, Conway, Jaeschke).

var. vestita, var. nov.

Whole plant short-pubescent; branchlets pubescent and usually pilose; leaves oblong to oblong-lanceolate, acute, ciliate, pilose above, densely pubescent beneath; corolla sparingly hairy without; otherwise, in habit and size of foliage like the type.

Turkestan: Saravshan (Komarov); Bokhara (Lipsky), in herb. Petrop.

51. L. ASPERIFOLIA, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 166 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 11 (1882). — Franchet, Ann. Sci. Nat. VI. **16**: 300 (1883).

L. affinis, "Jacquemont mscr.", Walpers, Rep. Bot. **2**: 449 (1843), in herb. Paris!, not Hooker & Arnott.
Xylosteum asperifolium, Decaisne in Jaquemont, Voy. dans l'Inde. **4**: 77. *pl. 85* (1843).
Xylosteum asperrimum, "Decne.", ex Clarke, *l. c.* **3**: 12.
Caprifolium asperifolium, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kashmir to Kumaon (Jacquemont! Harris, Duthie). Tibet (Falconer, Thomson, Schlaginweit). Turkestan (Capus).

52. L. HISPIDA, "Pallas", Roemer & Schultes, Syst. Veg. **5**: 258 (1819). — Ledebour, Fl. Alt. **1**: 251 (1829); Ic. Plant. Fl. Ross. **3**: 7. *pl. 212* (1831). — De Candolle, Prodr. **4**: 338 (1830). — Ledebour, Fl. Ross. **2**: 389 (1844). — Kirillow, Lonic. Russ. Reich. 30 (1849). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 165 (1858). — K. Koch, Dendr. **2**[1]: 35 (1872). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 46; Mél. Biol. **10**: 72 (1877). — Regel, Act. Hort. Petrop. **6**: 303 (1880). — Clarke in Hooker, Flor. Brit. Ind. **3**: 11 (1882). — Dippel, Handb. Laubholzk. **1**: 262. *f. 174* (1889). — Koehne, D. Dendr. 544 (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 10. *pl. 2. f. 1, 2. pl. 13. f. 2* (1898). — Palibin, Act. Hort. Petrop. **17**: 104 (1899). — Penkowsky, Derev. Kust. Ross. **3**: 18 (1901).

L. alpigena, Schangin in Pallas, N. Nord. Beitr. **6**: 93 (1793), not Linné.

Xylosteum hispidum, "Steph.", Fischer, Cat. Jard. Gorenki 44 (1812), nom. nud. — Ruprecht, Mém. Acad. Sci. St. Pétersb. VII. **14**[4]: 50 (1869).

L. bracteata, Royle, Ill. Bot. Himal. **1**: 237. *pl. 53. f. 2* (1839).

L. macrogyne, Klotzsch in Garcke, Reise Prinz. Waldmar 85. *pl. 72* (1862).

Caprifolium hispidum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Turkestan: Altai Mts. (Bunge, Karelin & Kirilow, Regel, Krassnow). Tibet (Soulié, Pratt). Himalayas: Kashmir to Kumaon (Royle, Hooker, Clarke, Duthie). China: Kansu (Potanin, Przewalski); Shensi (Giraldi); Szechuen (Potanin, Soulié, Pratt, Faber); Korea (Schlippenbach). — Sometimes cultivated (Arnold Aboretum, Goettingen, etc.).

This species is very variable in the pubescence and also in the size and shape of its leaves and flowers. The following varieties have been distinguished:—

A. Ovaries glandular or glabrous.

B. Leaves nearly glabrous on both sides or only setulose on the veins beneath, generally oval or ovate.

var. TYPICA, Regel, Bull. Soc. Nat. Mosc. **40**[1]**:** 3 (1867); Act. Hort. Petrop. **6:** 303 (1880).

BB. Leaves more or less hirsute or hispid on both sides, generally ovate-oblong.

C. Leaves hirsute on both sides, usually rounded at the base.

var. HIRSUTIOR, Regel, Bull. Soc. Nat. Mosc. **40**[1] **:** 4 (1867).

? *Xylosteum hispidum maximum*, Ruprecht, Mém. Acad. Sci. St. Pétersb. VII. 14[4]: 50 (1869), nom. nud.

***L. hispida hirta*, Regel & Winkler, Act. Hort. Petrop. 6: 303 (1880).**

Turkestan: (Regel, Fetissow). Tibet (Ladygin, no. 293).

CC. Leaves hispid on both sides, subcordate at the base.

var. SETOSA, Hooker f. & Thomson, Jour. Bot. Linn. Soc. **2:** 166 (1858).

Himalayas: Sikkim (Hooker!).

AA. Ovaries glandular and setulose; leaves hirsute on both sides.

var. **chaetocarpa**, Batalin, in herb.

China: Kansu (Przewalski!).

53. L. STEPHANOCARPA, Franchet, Jour. de Bot. **10:** 316 (1896). — Bois, Jour. Soc. Hort. France IV. **1:** 210. *f. 22* (1900).

China: Szechuen (Farges, no. 485!); Shensi (Giraldi, nos. 122[bis], 1750).

54. L. STROPHIOPHORA, Franchet, Bull. Soc. Philomath. Paris VII. **10**:142 (1886).

***L. pilosa*, Maximowicz, Bull. Acad. Sci. St. Pétersb. 24:47; Mél. Biol. 10:73 (1878), not Willdenow.**
***L. Amherstii*, Dippel, Handb. Laubholzk. 1:263 (1889), as to the flowers and Maximowicz's synonym.**
***Caprifolium Amherstii*, Kuntze, Rev. Gen. Pl. 1:274 (1891), in part.**

Japan: Hondo (Faurie, nos. 242! 144, 413, 414, 2118, 13112, Tschonoski).

Franchet distinguishes his *L. strophiophora* from *L. pilosa*, Maximowicz chiefly by the smaller leaves, the gibbous tube of the corolla and the pilose style; but the fully grown leaves do not differ in size and in the type specimen of Maximowicz the style is pilose below the middle and the tube distinctly gibbous, but the gibbosity is almost hidden by the calyx. The ovaries are sometimes glabrous.

55. **L. Pekinensis**, spec. nov.

***L. phyllocarpa*, Maximowicz, Bull. Acad. Sci. St. Pétersb. 24:46; Mél. Biol. 10:71 (1877), as to the flowers, not Maximowicz, Prim. Fl. Amur.**

Upright shrub; branches of last year light brown, rough with small tubercles; winter buds subglobose, covered by several pairs of orbicular-ovate, lustrous, brown scales. Leaves appearing with the flowers, not fully developed during anthesis, elliptic-ovate to oblong-ovate, acuminate, pubescent on both sides; flowers usually from buds at the end of last year's branchlets; peduncle puberulous and glandular, rather short; bracts ovate-lanceolate, 6–7 mm. long and 2–3 mm. broad, narrowed at the base, exceeding the calyx, sparingly pubescent outside and glandular; bractlets none; ovaries furnished with stiff hairs and stipitate glands; calyx cup-shaped, one-third to one-half as long as ovary, with 5 rounded unequal lobes, ciliate and glandular; corolla funnel-form, about 18 mm. long, tube narrow, conspicuously gibbous at the base, gradually widened

above, hairy without, glabrous within, lobes ovate, about one-third as long as tube; filaments glabrous, not exceeding the limb; style glabrous, somewhat exserted; ovary 3-celled.

China: in the mountains west of Pekin (in herb. Petersburg!). — *Plate 2. f. 1–5.*

This species is most nearly related to *L. Infundibulum* which differs in its glabrous branches, glabrous ovaries, larger flowers with narrower lobes, longer stamens and hairy style. From *L. phyllocarpa* it is readily distinguished by the setulose and distinct ovaries, the shape of the winter buds, the pubescence and other characters.

56. L. Infundibulum, Franchet, Jour. de Bot. **10**: 315 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 209 (1900).

L. spec. no. 34 (*Xylosteum*), Hemsley, Jour. Linn. Soc. **23**: 368 (1888). *Caprifolium praecox*, Kuntze, Rev. Gen. Pl. **1**: 274 (1891), not *L. praecox*, hort., ex K. Koch.

China: Hupeh (Henry, no. 3790!); Szechuen (Farges, no. 1118).

57. L. Elisae, Franchet, Nouv. Archiv. Mus. Nat. Paris II. **6**: 32. *pl. 12. f. B* (1883); Pl. David. **1**: 152. *pl. 12. f. B* (1884).

Caprifolium Elisae, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Chihili (David, no. 1774!)

Though this species differs from all other Bracteatae by its bractlets, its nearest relation according to its other characters seems to be with this group.

Subsect. 11. **Pyrenaicae**, subsect. nov.

This group consists only of one species with its geographical range restricted to the Pyrenees and the Balearic Isles. By the shape of its corolla it seems related to the

Purpurascentes, but it differs by the 3-celled ovary, the perfectly distinct, acute bractlets, also by the flowers appearing at the end of the branchlets, not near the base as in all Purpurascentes. By the shape of the bractlets it resembles somewhat the preceding species, *L. Elisae*, but differs in its glabrousness and the presence of terminal winter buds. Otherwise *L. Pyrenaica* shows no relation to any other species of the genus.

57. L. Pyrenaica, Linné, Spec. Pl. **1**: 174 (1753). — Aiton, Hort. Kew. **1**: 232 (1789). — Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbriss. ed. 2. **1**: 53. *pl. 15* (1801). — Persoon, Syn. Pl. **1**: 213 (1805). — Roemer & Schultes, Syst. Veg. **5**: 257 (1819). — De Candolle, Prodr. **4**: 333 (1830). — Loudon, Arb. Frut. Brit. **2**: 1054 (1838). — Grenier & Godron, Fl. France **2**: 11 (1850). — Reichenbach, Ic. Fl. Germ. **17**: 86. *pl. 1175. f. 2* (1855). — Pokorny, Oester. Holzpfl. 158. *pl. 29. f. 508–510* (1864). — Willkomm & Lange, Prodr. Fl. Hisp. **2**: 333 (1870). — K. Koch, Dendr. **2**^{1}: 29 (1872). — Dippel, Handb. Laubholzk. **1**: 251. *f. 163* (1889). — Koehne, D. Dendr. 545 (1893). — Bubani, Fl. Pyr. **2**: 332 (1900).

Caprifolium Pyrenaicum, Lamarck, Flor. Franç. **3**: 360 (1778). — Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Xylosteum Pyrenaicum, Dumont de Courset, Bot. Cult. **2**: 575 (1802). — Spach, Hist. Nat. Vég. **8**: 358 (1839).

Xylosteum campaniflorum, Loddiges, Bot. Cab. **14**. *pl. 1361* (1828).

L. nigra campaniflora, Loudon, Arb. Frut. Brit. **2**: 1053. *f. 813, 814* (1838).

Chamaecerasus Pyrenaica, Billiard, L'Hort. Franç. **1861**: 256 (1861).

L. Majoricensis, Gandoger, Bull. Soc. Bot. France **47**: 136 (1900).

Pyrenees (Bourgeau, Endress, Bordère). Balearic Isles: Majorca (ex Gandoger). — Sometimes cultivated (Arnold Arboretum, Goettingen, Berlin, etc.).

Subsect. 12. **Distegiae**, subsect. nov.

Lonicera § *Cuphanthae*, De Candolle, Prodr. **4**:336 (1830), in part.

Distegia, Rafinesque, New Fl. N. Am. **3**:21 (1836). — Greene, Man. Bot. San Francisco Bay 164 (1894).

This group of two species is native to northern and western North America and is chiefly characterized by its large glandular bractlets exceeding and loosely enveloping the distinct ovaries, enlarging after anthesis and becoming dark red and reflexed when the black berries are ripe. Upright shrubs with rather stout branches, sometimes sarmentose; flowers peduncled, upright, yellow to orange-red or scarlet; calyx obsolete; corolla tubular-funnelform with short upright or slightly spreading nearly regular limb; stamens shorter or about as long as corolla, glabrous; style glabrous, exserted; ovaries 3-celled, distinct; fruit black. This group has little affinity with any other; by its large bracts, the shape of the corolla and its glabrousness within and the distinct ovaries it approaches somewhat the Bracteatae, while in general habit and in its pubescence it bears some resemblance to the Alpigenae. A certain affinity to the latter is also indicated by the fact that a hybrid has originated between species of those two groups.

A. Stamens about as long as limb; corolla usually yellow with upright limb, 1–2 cm. long; leaves thin, usually narrowed at the base, glabrous or slightly pubescent, 5–12 cm. long; upright, usually low shrub. 59. *L. involucrata*, Banks.

AA. Stamens not exceeding the tube; corolla usually orange-red or scarlet without, yellow within, with slightly spreading limb, 1.5–2 cm. long; leaves thickish, pubescent at least beneath, rounded or narrowed at the base, 6–12 cm. long; branches sometimes sarmentose and to 5 m. long. 60. *L. Ledebourii*, Eschsch.

59. L. INVOLUCRATA, "Banks", Sprengel, Syst. Veg. **1**:759 (1825).—De Candolle, Prodr. **4**:336 (1830).—Lindley, Bot. Reg. **14**. *pl. 1179* (1828). — Hooker, Fl. Bor.-Am. **1**:284 (1834). — Loudon, Arb. Frut.

Brit. **2**: 1055. *f. 817–819* (1838). — Torrey & Gray, Fl. N. Am. **2**: 9 (1841). — Gray, Bot. Calif. **1**: 280 (1876); Syn. Fl. N. Am. 1^2: 16 (1884). — Dippel, Handb. Laubholzk. **1**: 259. *f. 172* (1889). —Koehne, D. Dendr. 544 (1893). — Piper & Beattie, Fl. Palouse Reg. 170 (1901). —Eastwood, Flor. S. Fork King's Riv. (Publ. Sierra Club no. 27) 80 (1902).

Xylosteum involucratum, Richardson in Franklin, Jour. Polar Sea. apx. 733 [6] (1823). — Howell, Fl. N. W. Am. **1**: 282 (1900).

*L. **Mociniana***, De Candolle, Prodr. **4**: 336 (1830). — A. L. P. de Candolle, Calques des Dess. Fl. Mex. ined. *pl. 446* (1874).

*L. **gibbosa***, Sessé & Moçino, Ic. Fl. Mex. ined. *pl. 446* (ex De Candolle).

Distegia nutans, Rafinesque, New Fl. N. Am. **3**: 21 (1836).

*L. **Webbiana*** "Hort. Simon-Louis", Zabel, Gartenfl. **30**: 369 (1881), not Wallich.

Caprifolium involucratum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891). — Greene, Fl. Francisc. 346 (1892).

*L. **Bordwelliana***, hort., ex Nicholson, Hand-l. Arb. Kew **2**: 17 (1896).

Western North America: Alaska to Mexico, east to Lower Canada, Wyoming, Colorado and Arizona (Bolander, Gray, Parry, Crandall, Allen, Nelson, MacDougal, Baker, Townsend & Barber et al.). — Sometimes cultivated (Arnold Arboretum, etc.).

The following forms have been distinguished: —

A. Corolla distinctly saccate at the base; leaves oval to elliptic-oblong.

B. Plant about 1 m. high or higher.

Typical form.

f. **serotina**, Koehne, in herb., differs chiefly by its flowers appearing later, from July to August. Leaves rather large, ovate-oblong, glabrous or nearly so; corolla 15–20 mm. long, flushed scarlet outside; bracts spreading at maturity, not reflexed.

Snow Mtn. (? Colo.) (C. A. Purpus in herb. Koehne!) — Cultivated (Späth's nursery, Rixdorf near Berlin, ex herb. Koehne).

BB. Plant scarcely higher than 50 cm.; leaves ovate to ovate-oblong.

f. **humilis**, Koehne, in herb.

Low shrub, to 60 cm. high; young branchlets minutely puberulous; leaves ovate to ovate-oblong, acuminate, 4–6 cm. long, ciliate, sparingly pilose beneath and along the midrib above; corolla 12–15 mm. long, yellow or slightly reddish, hairy without; anthers slightly exceeding the corolla; style much exserted, sometimes hairy; bracts green, with wavy, sometimes irregularly dentate margin.

Colorado: Mesa Grande (C. A. Purpus, 1892, no. 199, 239!), Mount Hesperus (Baker, Earle & Tracey, no. 255). — Cultivated (Späth's nursery, Rixdorf near Berlin, ex herb. Koehne).

AA. Corolla gibbous, but not saccate; leaves oblong to oblong-lanceolate, glabrous or nearly so, thin, light green, 7–12 cm. long.

var. flavescens, var. nov.

L. flavescens, Dippel, Gartenfl. **37**: 7. *f. 1* (1888); Handb. Laubholzk. **1**: 260. *f. 173* (1889). — Koehne, D. Dendr. 544 (1893).
Caprifolium flavescens, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

British Columbia (ex Dippel); Oregon (Pringle, Hall); Utah (Watson); Wyoming (Nelson, no. 5831).

60. L. Ledebourii, Eschscholtz, Mém. Acad. Sci. St. Pétersb. **10**: 284 (1826). — Chamisso & Schlechtendal, Linnaea **3**: 138 (1828). — De Candolle, Prodr. **4**: 336 (1830). — Hooker & Arnott, Bot. Beechey's Voy. 143 (1832). — Neumann, Rev. Hort. **5**: 373 *pl.* (1843). — Regel, Gartenfl. **2**: 289. *pl. 64* (1853). — K. Koch, Dendr. **2**[1]: 35 (1872). — Dippel, Handb. Laubholzk. **1**: 258. *f. 171* (1889). — Koehne, D. Dendr. 544 (1893). — Penkowsky, Derev. Kust. Ross. **3**: 18 (1901).

Chamaecerasus Ledebourii, Billiard, L'Hort. Franç. **1861**: 256 (1861).
L. intermedia, Kellogg, Proceed. Calif. Acad. **1**[2]: 154. *f. 47* (1863).
Caprifolium Ledebourii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891). — Greene, Fl. Francisc. 346 (1892).

Distegia Ledebourii, Greene, Man: Bot. San Francisco Bay 164 (1894).
Xylosteum Ledebourii, Howell, Fl. N. W. Am. **1**: 282 (1900).
L. Sieversii, hort: and *L. involucrata Ledebourii*, hort., ex Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 461 (1903).

California (Eschscholtz! Ross, Brewer, Bigelow, Hansen). — Sometimes cultivated (Arnold Arboretum, Goettingen, etc.).

Subsect. 13. **Oblongifoliae**, subsect. nov.

Lonicera § *Ebracteolatae* Zabel, in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 460 (1903), excl. his species nos. 62–67.

A monotypic group restricted to northeastern North America. It has no strongly marked characters, but as it shows no close relation to any other species, it seems best to consider it as representing a separate subsection. Its nearest affinity is with the Alpigenae, but it differs chiefly in the obsolete bractlets, wholly adnate to the ovaries and therefore indistinct, by the very caducous bracts, the absence of glands, the kind of pubescence and the small seeds. *L. oblongifolia* may be considered the American representative of the Alpigenae of the Old World, but it is less closely allied to that group than is *L. conjugialis* to the Old World Rhodanthae. Both species differ from their allies in the caducous bracts and the tendency of the bractlets to become obsolete.

61. L. Oblongifolia, Hooker, Fl. Bor.-Am. **1**: 284. *pl. 100* (1833). — Loudon, Arb. Frut. Brit. **2**: 1057. *f. 822* (1838). — Torrey & Gray, Fl. N. Am. **2**: 10 (1841). — Torrey, Flor. N. York **1**: 300 (1843). — Gray, Syn. Fl. N. Am. **1**^{2}: 15 (1884). — Dippel, Handb. Laubholzk. **1**: 250. *f. 162* (1889). — Koehne, D. Dendr. 547 (1893). — Britton & Brown, Ill. Fl. N. Stat. Can. **3**: 240. *f. 3464* (1898).

Xylosteum oblongifolium, Goldie, Edinb. Phil. Jour. **6**: 323 (1822).
L. Solonis, Sprengel, Syst. Veg. **1**: 759 (1825), in part.

Xylosteum villosum, Torrey, Fl. Middle Sect. U. S. **1**: 245 (1824), in part.
L. villosa, De Candolle, Prodr. **4**: 337 (1830), in part.
Caprifolium oblongifolium, Kuntze, Rev. Gen. Pl. **1**: 274 (1891), not Sweet.

Northeastern North America: Canada south to New York and west to Minnesota (Torrey, Pringle, Wood, Faxon, Fernald, Arthur & Bailey et al.). — Sometimes cultivated (Arnold Arboretum, etc.).

f. CALYCULATA, Zabel, Gartenfl. **38**: 526 (1889), differs only in the distinctly toothed calyx.

Canada (Macoun). — Sometimes cultivated (Goettingen, Muenden).

Subsect. 14. **Alpigenae**, subsect. nov.

A group of 14 species distributed from eastern Asia including Japan through central Asia to Europe. It is closely allied to the following subsection, but differs in the thick, ovate winter buds with obtusish, more or less caducous scales, the often glandular pubescence, the short obtuse or obsolete calyx lobes and the large nearly smooth seeds. Besides these distinctive characters there are other peculiarities in the general habit of the species of the two subsections, difficult to describe, but easily recognized if one is familiar with some of the species; by these characters taken together the two groups appear well marked, though the differences may seem rather slight. The Alpigenae are medium-sized or large upright shrubs with rather stout branches; leaves large for the genus, glabrous or pubescent; flowers appearing on the lower part of the branchlets on long peduncles usually thickened toward the apex; bracts usually subulate; bractlets small, in pairs or connate into a cupula; calyx with short obtuse or obsolete teeth; corolla two-lipped, dull-colored, generally about

1 cm. long; tube wide and short, strongly gibbous, very villous within; style pilose; fruits connate or distinct, scarlet; seeds smooth, pale yellowish, 4–6 mm. long.

A. **Bractlets in two pairs, usually the anterior connate, the posterior distinct, small.**

B. **Bracts subulate or linear.**

C. **Ovaries wholly connate or nearly so.**

D. **Leaves glabrous above, ciliate.**

E. **Leaves glabrous beneath or only slightly pubescent and glabrous at length, usually attenuate at the base, elliptic to oblong-lanceolate, acuminate, 6–10 cm. long; corolla usually more or less dark red; filaments hairy below the middle.**

62. ***L. alpigena*, Linn.**

EE. **Leaves pubescent beneath, oval or obovate to oblong-ovate, usually rounded or subcordate at the base, 5–8 cm. long; corolla greenish-yellow; filaments glabrous.** 63. ***L. Glehnii*, Fr. Schmidt.**

DD. **Leaves pubescent or pilose on both sides.**

E. **Leaves oblong-ovate, accuminate, sparingly appressed-pilose above, more densely beneath, 6–9 cm. long; young branchlets glabrous; bracts much exceeding the calyx, glandular; corolla distinctly stipitate, dark red.**

64. ***L. Setchuensis*, Rehd.**

EE. **Leaves oval or obovate, abruptly acuminate, velutinous-pubescent and glandular beneath, less so above, 3.5–5.5 cm. long; branchlets densely glandular-pubescent; peduncles 8–16 mm. long; bracts slightly exceeding the calyx, pubescent; corolla yellowish.** 65. ***L. glutinosa*, Vis.**

CC. **Ovaries nearly distinct, connate only at the base, or occasionally connate one-half.**

D. **Ovaries glabrous.**

E. **Leaves pubescent and often glandular, ovate to oblong-ovate.**

F. **Leaves abruptly acuminate, densely short-pubescent beneath, nearly glabrous above, 4–7 cm. long; peduncles and branchlets pubescent and glandular; corolla glabrous outside or nearly so; style pilose below the middle.**

66. ***L. Hellenica*, Orph.**

FF. **Leaves acuminate, pilose especially beneath.**

G. Leaves glandular on both sides and more or less pilose, 6–10 cm. long; peduncles and branchlets glandular and pilose, rarely glabrous: corolla glandular and hairy without, rarely glabrous.
67. *L. Webbiana*, Wall.

GG. Leaves pilose on both sides, more densely beneath, glandless or nearly so, 3–5.5 cm. long; peduncles and branchlets glabrous.

H. Filaments slightly shorter than limb, longer than the anthers, pilose near the base; leaves 3–4 cm. long.
68. *L. Tatsiensis*, Franch.

HH. Filaments glabrous, about half as long as limb, shorter than anthers; leaves with undulate or sinuate margin. 4–5.5 cm. long.
69. *L. heteroloba*, Batal.

EE. Leaves glabrous or nearly so, elliptic to oblong-lanceolate, (2–) 5–9 cm. long, sometimes lobed; peduncles glabrous or glandular; corolla usually glabrous without. 70. *L. heterophylla*, Decne.

DD. Ovaries densely glandular; corolla glandular without, dark purple, distinctly stipitate; bractlets ovate-lanceolate, all nearly distinct; leaves elliptic-obovate, acuminate, 4–6 cm. long, ciliate, glandular beneath as the whole plant.
71. *L. adenophora*, Franch.

BB. Bracts oblong-ovate or ovate-lanceolate, broad at the base, longer than the ovaries; corolla stipitate (unknown in no. 73); plants with glandular pubescence.

C. Ovaries distinct; bracts ovate-lanceolate; corolla pilose without; leaves oblong-ovate, acuminate, densely grayish-pubescent beneath, sparingly pilose above, 6–10 cm. long.
72. *L. Fargesii*, Franch.

CC. Ovaries almost wholly connate; bracts oblong-ovate; leaves oblong-obovate, gradually narrowed at the base, bluntly acuminate, 9–17 cm. long. 73. *L. vegeta*, Rehd.

AA. Bractlets connate into a cupula, about one-half or three-quarters as high as the ovaries; corolla glabrous without, stipitate.

B. Leaves sparingly pubescent above, more densely beneath, obovate, abruptly and obtusely acuminate; branchlets, petioles and peduncles glandular; ovaries connate only at the base; bracts longer than ovaries, ovate, long acuminate.
74. *L. Vidalii*, Franch. & Sav.

BB. Leaves almost glabrous, elliptic-oblong, long acuminate, 8–12 cm. long; branchlets, petioles and peduncles glabrous; ovaries connate one-half; bracts shorter than ovaries, subulate.

75. *L. Hemsleyana*, Rehd.

62. L. ALPIGENA, Linné, Spec. Pl. 1 : 174 (1753). — Aiton, Hort. Kew. **1**:233 (1789). — Willdenow, Spec. Pl. **1²**:987 (1797). — Schmidt, Oester. Baumz. **2**:89, *pl. 112* (1794). — Persoon, Syn. Pl. **1**:213 (1805). — Guimpel, Abb. Deutsch. Holz. **1**:20. *pl. 10* (1815). — De Candolle, Prodr. **4**:336 (1830). — Bertoloni, Fl. Ital. **2**:565 (1835). — Loudon, Arb. Frut. Brit. **2**:1056. *f. 820, 821* (1838). — Spenner in Nees von Esenbeck, Gen. Pl. Fl. Germ. fasc. 21. *pl. 402, f. 6–9, 21–23* (1840). — Grenier & Godron, Fl. France. **2**:11 (1850). — Reichenbach, Ic. Fl. Germ. **17**:86. *pl. 1175. f. 3, 4* (1855). — Pokorny, Oester. Holzpfl. 160. *pl. 29. f. 511, 512* (1864). — Herder, Bull. Soc. Nat. Mosc. **37¹**:203. *pl. 2. f. 5* (1864). — Willkomm & Lange, Prodr. Fl. Hisp. **2**:334 (1870). — K. Koch, Dendr. **2¹**:31 (1872). — Boissier, Flor. Or. **3**:8 (1875). — Arcangeli, Comp. Fl. Ital. 319 (1882). — Dippel, Handb. Laubholzk. **1**:242 (1889). — Koehne, D. Dendr. 547 (1893). — Bubani, Fl. Pyren. **2**:332 (1900). — Penkowsky, Derev. Kust. Ross. **3**:15 (1901). — Schneider, Dendr. Winterstud. 226. *f. 204* (1903).

***Caprifolium alpinum*, Lamarck, Fl. Franç. 3 : 367 (1778).**

***Caprifolium alpigenum*, Gaertner, De Fruct. et Sem. 1 : 136 (1788). — Kuntze, Rev. Gen. Pl. 1 : 274 (1891).**

***Chamaecerasus alpigenus*, Delarbre, Fl. d'Auvergne ed. 2. 130 (1800).**

***Isika lucida*, Moench, Meth. Pl. 504 (1794).**

***Isika alpigena*, Borkhausen, Handb. Forstbot. 2 : 1682 (1800). — Roehling, Deutschl. Fl. ed. 2. 2 : 176 (1812).**

***Xylosteum alpinum*, Dumont de Courset, Bot. Cult. 2 : 575 (1802).**

***Xylosteum alpigenum*, Fischer, Cat. Jard. Gorenki 44 (1812). — Fuss, Flor. Transsylv. Exc. 284 (1866).**

***Euchylia alpigena*, Dulac, Fl. Haut.-Pyrén. 463 (1867).**

Middle and South Europe: in the mountains from the Pyrenees to Bosnia (Bartling, Spenner, Berger, A. Braun, Knapp et al.). There are some rather scant Asiatic specimens from the Altai Mtns. (Regel), China, Shensi (Giraldi, no. 121), and from Japan, Hondo (Faurie, no. 345) which I have doubtfully referred to *L. heterophylla* and *L. Glehnii*, but may belong to *L. alpigena;* this would greatly extend the range of *L. alpigena*. — Sometimes cultivated (Arnold Arboretum, etc.).

A. Leaves glabrous or pubescent beneath.

B. Corolla glabrous without; bractlets small; leaves glabrous or slightly pubescent.

Typical form.

f. MACROPHYLLA, Arcangeli, Comp. Fl. Ital. 319 (1882). Differs in its large, quite glabrous leaves.

f. NANA, Dippel, Handb. Laubholzk. 1: 243 (1889).— Nicholson, Dict. Gard. Suppl. 502 (1901).

Chamaecerasus alpigena nana, Carrière, Rev. Hort. 1887 : 63 (1887).

A dwarf form with the leaves beneath and the peduncles pubescent.

BB. Corolla hairy without; bractlets one-third to one-half as long as ovaries; leaves dark green above, pubescent beneath.

f. SEMICONNATA, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 453 (1903.)

L. Webbiana, Dippel, Handb. Laubholzk. 1 : 243. *f. 155* (1889), not Wallich.

AA. Leaves beneath and petioles sparingly glandular.

f. GLANDULIFERA, Freyn, Zool.-Bot. Ges. Wien 38 : 609 (1888).

Bosnia (P. E. Brandis!).
Resembles in foliage very much *L. heterophylla*.

63. L. Glehnii, Fr. Schmidt, Mém. Acad. Sci. St. Pétersb. VII. **12**[2]: 143. *pl. 3. f. 8–13* (1868). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 38; Mél. Biol. **10**: 61 (1877). — Herder, Bull. Soc. Nat. Mosc. **53**[1]: 18 (1878).

Caprifolium Glehnii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Saghalin (Schmidt!). Japan: Hondo (Faurie); Hokkaido (Miyabe, Hori).

64. **L. Setchuensis,** spec. nov.

L. Orientalis Setchuensis, Franchet, Jour. de Bot. **10**: 311 (1896).

Upright shrub; young branchlets glabrous; leaves oblong-lanceolate, 6–9 cm. long, long acuminate, rounded or broadly cuneate at the base, sparingly appressed pilose above, more densely beneath and sparingly glandular on both sides, the margin often slightly undulate; petioles sparingly pilose, about 8 mm. long. Flowers on slender peduncles almost half as long as the leaves; bracts subulate, glandular, twice as long as ovary; bractlets orbicular, small, glandular-ciliate; calyx teeth short, ciliate; ovaries wholly connate, glabrous; corolla two-lipped, purple, glabrous outside; tube hairy within, wide, shorter than limb, abruptly contracted into a stalk-like base; lobes of the upper lip rounded, about four times shorter than limb; stamens pilose at the base, the longer ones almost as long as the limb; style as long as the corolla, pilose except at the upper third; fruit unknown. — *Plate 3. f. 5–7.*

China: Szechuen (Farges!).

65. L. glutinosa, Visiani, Fl. Dalmat. **3**: 18 (1852); Fl. Dalmat. Suppl. 104. *pl. 4* (1872). — Reichenbach, Ic. Fl. Germ. **17**: 86 (1855). — K. Mueller in Walpers, Ann. Syst. Bot. **5**: 95 (1858). — Koehne, D. Dendr. 547 (1893).

Caprifolium glutinosum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

South Europe: Dalmatia (Pichler); Hercegovina (K. Vandas).

66. L. Hellenica, Orphanides in Boissier, Diagn. Pl. Nov. Or. II. **2**: 108 (1856). — Boissier, Fl. Or. **3**: 8 (1875). — Halacsy, Consp. Fl. Graec. **1**: 701 (1901).

Caprifolium Hellenicum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Greece: Mount Chelmos (Orphanides!).

67. L. Webbiana, Wallich, Cat. No. 476 (1828), nom. nud. — De Candolle, Prodr. **4**: 336 (1830). — Buser in Boissier, Fl. Or. Suppl. 277 (1888). — Koehne, D. Dendr. 547 (1893). — Rehder in Sargent, Trees and Shrubs **1**: 137. *pl. 69* (1903).

L. alpigena, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 171 (1858), not Linné. — Brandis, Forest Fl. 256 (1874). — Clarke in Hooker, Fl. Brit. Ind. **3**: 15 (1882). — Collett, Fl. Siml. 225 (1902).

L. Amherstii, Dippel, Handb. Laubholzk. **1**: 263. *f. 175* (1889), in part.

Caprifolium Amherstianum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891), in part.

L. alpigena Webbiana, Nicholson, Dict. Gard. Suppl. 502 (1901).

Himalayas: Kashmir to Kumaon (Thomson, Stuart, Schlagintweit, Reid). China: Hupeh (E. H. Wilson, no. 2081). Afghanistan (Aitchison). Southeast Europe: Hercegovina (Jablonowsky). — Sometimes cultivated (Arnold Arboretum, Goettingen, Kew, etc.).

Wilson's specimens differ by the corolla being glabrous outside and the filaments pilose below the middle.

68. L. Tatsiensis, Franchet, Jour. de Bot. **10**: 313 (1896). — Bois, Jour. Soc. Hort. France. IV. **1**: 210 (1900).

Tibet: Ta-tsien-lu (Soulié, nos. 195! 108).

This and the following species are closely related to *L. Webbiana* and additional material may show that the distinguishing characters are not constant.

69. L. HETEROLOBA, Batalin, Act. Hort. Petrop. **12**: 174 (1892). — Wolf, Gartenfl. **42**: 333 (1893).

China: Kansu (Potanin!). — *Plate 15.*

70. L. HETEROPHYLLA, Decaisne in Jacquemont, Voy. dans l'Inde **4**: 80. *pl. 88* (1844). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 170 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 15 (1882). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 37. *pl. 8* (1898).

***Caprifolium heterophyllum*, Kuntze, Rev. Gen. Pl. 1**: 274 (1891).

Himalayas: Kashmir (Jacquemont! Jaeschke, Clarke). Afghanistan (Aitchison). Turkestan (Capus).

There seem to be no constant characters to separate specifically *L. oxyphylla*, Edgeworth, *L. Karelini*, Bunge and *L. Formanekiana*, Halacsy from *L. heterophylla*. If the assertion of Kirillow were correct that *L. Sibirica* De Vest, recently taken up by Penkowsky, is the same as *L. Karelini*, the name of De Vest would be the oldest one for the species in question, but his description does not seem to point this way; especially "foliis subtus pubescentibus . . . ramulorum inferioribus cordatis . . . apice rotundatis cum acumine brevi" does not agree very well with *L. Karelini*, and would fit much better *L. Glehnii* which also has the peduncle very distinctly thickened below the apex as mentioned by De Vest for his *L. Sibirica*. The *L. Sibirica* De Vest, of which even the habitat is not known with certainty, remains, therefore doubtful and as, moreover, the name is preoccupied by *L. Sibirica*, Georgi, a form of *L. Tatarica*, it may keep its place among the doubtful synonyms.

The following forms can be distinguished: —

A. Leaves partly more or less lobed, thickish, glabrous; corolla hairy and glandular without.

Typical form.

AA. Leaves not lobed.

B. Leaves elliptic to oblong-lanceolate, usually glandular along the veins on both sides and somewhat thickish; corolla usually glandular without.

C. Leaves 4–8 cm. long.

var. **Karelini**, var. nov.

?*L. Sibirica*, De Vest in Roemer & Schultes, Syst. Veg. **5**: 259 (1819), not Georgi. — Penkowsky, Derev. Kust. Ross. **3**: 10 (1901).

L. alpigena Sibirica, De Candolle, Prodr. **4**: 336 (1830).

L. nigra, Karelin & Kirilow, Bull. Soc. Nat. Mosc. **15**: 370 (1842), not Linné. — Ledebour, Fl. Ross. **2**: 389 (1844), in part.

L. Karelini, Bunge in Kirillow, Lonic. Russ. Reich. 33 (1849). — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 203. *pl. 1. f. 4. f* (1864). — Regel, Act. Hort. Petrop. **5**: 610 (1878). — Dippel, Handb. Laubholzk. **1**: 222 (1889). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 34. *pl. 7. 15. f. 37, 38* (1898).

Xylosteum Karelini, Ruprecht, Mém. Acad. Sci. St. Pétersb. VII. **14**[4]: 50 (1869).

Caprifolium Karelini, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Central Asia: Alatau Mts. (Karelin & Kirilow! Regel, Semenow, Fetissow, Buniakowisky).

CC. Leaves 2–3 cm. long, oblong to elliptic-lanceolate, glabrous; peduncles 2–2.5 long.

var. **alpina**, comb. nov.

L. Karelinii alpina, Krassnow in herb!

L. Karelinii alpigena "Krassnow" Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 37 (1878), sphalmate.

Alatau Mts. (Krassnow! Przewalski).

BB. Leaves not glandular, ciliate, sparingly pubescent on the veins beneath or glabrous, usually thin.

C. Leaves ovate-lanceolate to oblong-lanceolate, long acuminate, to 10 cm. long.

var. **oxyphylla**, var. nov.

L. oxyphylla, Edgeworth, Trans. Linn. Soc. **20**: 60 (1851).

Himalayas: Gurwhal (Edgeworth!); Botan (Griffith).

This variety shows some affinity to *L. Webbiana* and

could perhaps be considered as well as a glandless narrow-leaved form of that species.

CC. Leaves elliptic or ovate-elliptic, glabrous or slightly pubescent beneath; corolla glabrous without.

var. Formanekiana, var. nov.

L. Formanekiana, Halacsy, Naturf. Ver. Bruenn **35**: 176 (1896), nom. nud.; Verh. Zool.-Bot. Ges. Wien **46**: 473 (1896); **47**: 46 (1897); Consp. Fl. Graec. **1**: 701 (1901).

L. alpigena Formanekiana, Doerfler, Verh. Zool.-Bot. Ges. Wien **47**: 114 (1897).

L. Formanekiana adenophora, Halacsy, Consp. Fl. Graec. **1**: 701 (1901).

Balkan Peninsula: Macedonia (Formanek & Doerfler, ex Halacsy); Epirus (Baldacci, no. 79, 1896, no. 70, 1900).

71. L. ADENOPHORA, Franchet, Jour. de Bot. **10**: 311 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 208 (1900).

China: Yunnan (Delavay, no. 2224!).

72. L. FARGESII, Franchet, Jour. de Bot. **10**: 312 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 209 (1900).

China: Szechuen (Farges, no. 1053!).

73. **L. vegeta,** spec. nov.

Upright shrub with stout branches covered with a short glandular pubescence when young. Leaves elliptic-oblong to oblong-obovate, 9–17 cm. long, obtusely acuminate, gradually narrowed at the base into a short stout petiole, short-pubescent and glandular beneath, sparingly short-pubescent above. Peduncles stout and straight, about 4 cm. long, densely pubescent and glandular; bracts large, much exceeding the ovaries, 1.5 cm. long, ovate-oblong, acutish, densely pubescent and glandular; bractlets small, orbicular, pubescent and glandular; ovaries wholly con-

nate, glabrous; calyx teeth short, ovate, glandular-ciliate; flowers unknown.

China: Shen-si (Giraldi, no. 133, in herb. Berlin). — *Plate 2. f. 6, 7.*

Though the flowers of this species are not known, there can be hardly any doubt that it belongs in this group and in the affinity of *L. Fargesii;* by the unusually large size of all parts it is easily distinguished from all allied species.

74. L. Vidalii, Franchet & Savatier, Enum. Pl. Jap. **2**: 386 (1879).

Caprifolium Vidalii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Japan: Hondo (Vidal!).

Probably also *L.* spec., Faurie, no. 417, belongs here, but it differs by the leaves being glabrous above and only sparingly pubescent beneath and by the sometimes one-half connate ovaries.

75. **L. Hemsleyana,** comb. nov.

L. no. 33, spec. ex affinitate *L. Maximowiczii*, Hemsley, Jour. Linn. Soc. **23**: 368 (1888).
Caprifolium Hemsleyanum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Upright shrub with stout, light gray branches; young branchlets glabrous; winter buds rather large with ovate, obtuse scales. Leaves elliptic-oblong, 6–8 cm. long, long-acuminate, narrowed into glabrous and slender petioles 8–12 mm. long, sparingly pilose on the midrib beneath, otherwise glabrous. Peduncles glabrous, 1.5–2 cm. long; bracts subulate, about half as long as ovaries, glabrous; bractlets connate into a 4-lobed cupula about half as high as the ovaries, glandular-ciliate; ovaries connate one-half to two-thirds; calyx teeth short, triangular-ovate, obtuse, sparingly ciliate; corolla two-lipped, about 1 cm. long, yellowish, glabrous without; tube short and wide, villous

within, prominently gibbous and abruptly contracted into a stalk-like base; limb somewhat longer than the tube, the upper lip divided about one-third into ovate to oval lobes; stamens glabrous, the longer ones about as long as limb; style pilose, as long as the corolla; fruit unknown.

China: Kiang-si (Maries! in herb. Kew).—*Plate 3. f. 1–4.*

Subsect. 15. Rhodanthae, Maxim.

Lonicera § *Rhodanthae*, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 38; Mél. Biol. **10**: 60 (1877), excl. *L. Glehnii*.

Lonicera § *Rhodanthae melanocarpae*, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 452 (1903).

Lonicera § *Rhodanthae erythrocarpae*, Zabel, *l. c.* 453, excl. *L. Tatarica* and *L. alpigena* with their allies.

This group contains 13 species of which one is native to North America, one to Europe, one to north Africa and one to western Asia, while all the others are from central and eastern Asia. They are closely related to the preceding group, but chiefly distinguished by the elongated, 4-angled winter buds with persistent acuminate scales, by the usually conspicuous acute calyx teeth, the granulose seeds, the absence of glandular pubescence on the foliage, their less robust habit and generally much smaller leaves. Medium-sized, rarely large, upright shrubs with the slender branches glabrous or nearly so; leaves usually glabrous or only slightly pubescent, never glandular, usually rather small; flowers appearing on the middle and upper part of the branches on slender, long or sometimes short peduncles; bracts small, subulate; bractlets connate into a cupula or in pairs; calyx teeth conspicuous, acute, obsolete only in *L. conjugialis;* corolla two-lipped, about 1 cm. or less long, yellowish-white to pinkish or violet purple; tube short and gibbous; style pubescent,

rarely almost glabrous; anthers oblong to oval; fruits connate or distinct, scarlet or black; seeds 2–4 mm., rarely to 6 mm. long, granulose, brown. The first three species of this group show by their general habit and also by their red fruits and their pubescence a closer relation to the Alpigenae than the rest of the group, which are all black-fruited except *L. Chamissoi*.

A. Ovaries wholly or partly connate; bractlets in two separate pairs.
  B. Fruit red; peduncles long and slender; corolla usually dark purple.
    C. Bractlets minute or obsolete; bracts caducous; calyx with minute or obsolete teeth; leaves oval to ovate, 3–4 cm. long, slightly pubescent; scales of winter buds rather few, ovate, ciliate. 76. *L. conjugialis*, Kellogg.
    CC. Bractlets conspicuous; bracts persistent.
      D. Leaves more or less pubescent beneath and ciliate.
        E. Bractlets about half as long as ovaries; bracts shorter or longer than ovaries; calyx more than half as high as ovary; leaves oblong to oblong-lanceolate, acuminate, 5–7 cm. long, densely villous-pubescent beneath. 77. *L. Tatarinovii*, Maxim.
        EE. Bractlets much shorter; bracts one-third to one-half as long as ovaries; leaves oval to oblong, usually acute, 3–7 cm. long, pubescent beneath or nearly glabrous. 78. *L. Maximowiczii*, Reg.
      DD. Leaves quite glabrous, very short petioled, oval to ovate, 2.5–5 cm. long, rounded at the base; bracts minute, glabrous; bractlets and the short calyx teeth glabrous; style glabrous or with few scattered hairs. 79. *L. Chamissoi*, Bunge.
  BB. Fruit bluish-black, wholly connate; peduncles often short; corolla yellowish-white, pinkish or violet.
    C. Leaves green, grayish-green or glaucescent beneath, glabrous or pubescent, oval or ovate to ovate-lanceolate, 4–10 cm. long; peduncles 0.5–2.5 cm. long; corolla usually dull violet or pinkish. 80. *L. Orientalis*, Lam.
    CC. Leaves glaucous beneath, glabrous; corolla yellowish-white, often suffused with pink; calyx teeth linear-lanceolate.
      D. Leaves acute, oval to elliptic-oblong, 4–8 cm. long; peduncles 2–3 cm. long. 81. *L. discolor*, Lindl.
      DD. Leaves obtuse, obovate to elliptic, cuneate at the base; peduncle short, as long or two to three times as long as the petioles. 82. *L. Kachkarovii*, Rehd.

AA. Ovaries distinct or sometimes partly connate; bractlets connate into a cupula, sometimes deeply lobed, only occasionally in distinct pairs; fruit black.

B. Peduncles 2–12 mm. long; leaves quite glabrous.

C. Leaves emarginate or obtuse, obovate, 10–12 mm. long, glaucous beneath; cupula about one-third as long as ovaries; ovaries connate one-half; style glabrous.

83. *L. retusa*, Franch.

CC. Leaves acute or rarely obtuse; ovaries distinct; style pilose.

D. Cupula about one-third as long as ovaries; bracts slightly longer; peduncles 2–3 mm. long; leaves oval or ovate, acute or obtusish, 1–3 cm. long.

84. *L. Kabylica*, Rehd.

DD. Cupula one-half or almost as long as ovaries, distinctly lobed or occasionally the bractlets in pairs; leaves elliptic or rhombic-ovate, acute, 2.5–6 cm. long.

85. *L. nervosa*, Maxim.

BB. Peduncles 1.5–4 cm. long.

C. Leaves quite glabrous, elliptic-oblong, 6–9 cm. long, acute at both ends; bracts obtuse, shorter than bractlets; cupula half as long as ovaries, often divided to the base.

86. *L. Tschonoskii*, Maxim.

CC. Leaves pubescent beneath, at least along the midrib, or ciliate; bracts acute, subulate.

D. Leaves ovate to oblong-lanceolate, acute, 4–6 cm. long, thin, pubescent along the midrib beneath; cupula usually one-third to one-half as long as the ovaries.

87. *L. nigra*, Linn.

DD. Leaves ovate-lanceolate, acuminate, 4–6 cm. long, of firm texture, pubescent beneath, sometimes glabrous, ciliate; peduncles finely puberulous; cupula as long as ovaries or sometimes shorter.

88. *L. lanceolata*, Wall.

76. L. CONJUGIALIS, Kellogg, Proceed. Calif. Acad. 1^2:67. *f. 15* (1863). — Watson, Bot. King Rep. Explor. 133 (1871). — Gray, Bot. Calif. **1**:281 (1876); Syn. Fl. N. Am. 1^2:15 (1884). — Koehne, D. Dendr. 548 (1893).

L. Breweri, Gray, Proceed. Am. Acad. **6**:537 (1865).
Caprifolium conjugiale, Kuntze, Rev. Gen. Pl. **1**:274 (1891). — Greene, Fl. Francisc. 346 (1894).
Xylosteum conjugiale, Howell, Fl. N. W. Am. **1**:282 (1900).
L. sororia, Piper, Bull. Torrey Bot. Club **29**:644 (1902).

Western North America: California (Kellogg! Gray, Brewer, Bolander); Oregon (Cusick, no. 2759, Howell); Washington (Suksdorf); Nevada (Veatch, ex Gray).— Rarely cultivated (Darmstadt).

77. L. Tatarinovii, Maximowicz, Prim. Fl. Amur. 138 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 38; Mél. Biol. **10**: 61 (1877).—Forbes & Hemsley, Jour. Linn. Soc. **23**: 367 (1888).

Caprifolium Tatarinovii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Chihili (David, nos. 549, 2252).

The fruit, not described by Maximowicz, is red in David's no. 549. David's no. 2252 differs from the original description by the bracts being as long as or longer than the ovaries.

78. L. Maximowiczii, Maximowicz, Prim. Fl. Amur. 137 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 38; Mél. Biol. **10**: 60 (1877).—Herder, Bull. Soc. Nat. Mosc. **37**[1]: 203. *pl. 2. f. 6, d* (1864); **53**[1]: 18 (1878).—Regel, Gartenfl. **17**: 322. *pl. 597* (1868).—K. Koch, Dendr. **2**[1]: 28 (1872).—Dippel, Handb. Laubholzk. **1**: 248. *f. 160* (1889).—Koehne, D. Dendr. 548 (1893).—Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 32. *pl. 9. f. 3. pl. 15. f. 32, 33* (1898).—Penkowsky, Derev. Kust. Ross. **3**: 16 (1901).

Xylosteum Maximowiczii, Ruprecht in Maximowicz, Bull. Phys. Math. Acad. Sci. St. Pétersb. **15**: 136, 370 (1857).
Caprifolium Maximowiczii, Kuntze, Rev. Gen. Plant. **1**: 274 (1891).

Mandshuria (Maximowicz! Maack, Wilford). China: Shensi (Giraldi, no. 1463).—Sometimes cultivated (Arnold Arboretum, etc.).

var. Sacchalinensis, Fr. Schmidt, Mém. Acad. Sci. St. Pétersb. VII. **12**[2]: 142 (1868).

Saghalin (Fr. Schmidt!). Japan: Hondo (Faurie, nos. 5493, 7320, Miyabe).

This variety differs by short acuminate or obtusish leaves glabrous at length, by wholly connate fruits and longer, acuminate calyx teeth.

f. ATROPURPUREA, Dippel, Handb. Laubholzk. **1**: 249 (1889), seems hardly different from the type.

79. L. CHAMISSOI, Bunge in Kirillow, Lonic. Russ. Reich. 28 (1849). — Maximowicz, Prim. Fl. Amur. 136 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 38; Mél. Biol. **10**: 60 (1877). — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 208. *pl. 2. f. 1, 2, a* (1864); **53**[1]: 25 (1878). — Koehne, D. Dendr. 548 (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 31. *pl. 11. f. 1–3. pl. 15. f. 28, 29* (1898).

L. nigra, Chamisso & Schlechtendal, Linnaea **3**: 137 (1828), not Linné. — Ledebour, Fl. Ross. **2**: 389 (1844), in part.
L. Riederiana, Fischer in herb. (ex Herder).
Caprifolium Chamissoi, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Eastern Asia: Mandshuria (Maximowicz); Saghalin (Fr. Schmidt, Augustinowicz); Kamchatka (Chamisso! Wright, Peters); Kurile Islands (ex Maximowicz); Japan "Shibotoro, Etorotu" (Miyabe).

80. L. ORIENTALIS, Lamarck, Encycl. Méth. Bot. **1**: 731 (1783). — Persoon, Syn. Pl. **1**: 214 (1805). — De Candolle, Prodr. **4**: 337 (1830). — Jaubert & Spach, Ill. Pl. Or. **1**: 134. *pl. 71* (1842–43). — Walpers, Rep. Bot. **6**: 5 (1846). — Kunze, Ind. Sem. Hort. Lips. **1848**, ex Linnaea **24**: 192 (1851). — Boissier, Fl. Or. **3**: 8 (1875). — Dippel, Handb. Laubholzk. **1**: 245. *f. 157* (1889), as to the figure.

Xylosteum Orientale, Fischer, Cat. Jard. Gorenki 44 (1812).
Caprifolium Orientale, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Asia Minor (Tournefort! Gundelsheimer, Bornmueller, Sintenis).

The following varieties may be distinguished: —

A. Peduncles short, only occasionally longer than 1 cm.
B. Leaves pubescent beneath and usually rounded at the base, oval to oblong-lanceolate; tube strongly gibbous.

Typical form.

BB. Leaves glabrous or nearly so, usually broadly cuneate at the base.
C. Leaves oval to oblong-elliptic; corolla usually violet with gibbous tube.

var. CAUCASICA, Zabel, Syst. Verz. Muenden 24 (1878).

L. Caucascia, Pallas, Fl. Ross. **1**: 59 (1784). — Jaubert & Spach, Ill. Pl. Or. **1**: 135. *pl. 72* (1842–43). — Kirillow, Lonic. Russ. Reich. 45 (1849). — Walpers, Rep. Bot. **6**: 5 (1846). — Boissier, Fl. Or. **3**: 8 (1875). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 39. *pl. 12. f. 1–3. pl. 15. f. 28, 29* (1898).

L. coerulea, Gueldenstaedt, Reis. Russl. **1**: 421 (1787), ex Kirillow, not Linné.

L. Orientalis, Marschall Bieberstein, Fl. Taur. Cauc. **1**: 158 (1808). — Loudon, Arb. Frut. Brit. **2**: 1058 (1838). — K. Koch, Dendr. 2^1: 32 (1872). — Dippel, Handb. Laubholzk. **1**: 245 (1889). — Koehne, D. Dendr. 549 (1893). — Penkowsky, Derev. Kust. Ross. **3**: 15 (1901).

? *L. Tatarica Caucasica*, Endlicher, Cat. Hort. Vindob. **1**: 459 (1842), nom. nud.

L. Schmitziana, Dippel, Handb. Laubholzk. **1**: 247 (1889), herb. Dippel! — Koehne, D. Dendr. 548 (1893).

Caprifolium Caucasicum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Caprifolium Schmitzianum, Kuntze, *l. c.*

Transcaucasia (Stevens, Hohenacker, Wilhelm). Armenia (Scovits). China: Shen-si (Giraldi, nos. 1465, 1466). — Cultivated (Arnold Arboretum, etc.).

CC. Leaves oblong to lanceolate; corolla pinkish or whitish-pink; tube slightly gibbous.

var. LONGIFOLIA, Dippel, Handb. Laubholzk. **1**: 246. *f. 158* (1889), excl. syn.

L. Kesselringii, Regel, Act. Hort. Petrop. **11**: 310 (1890); Gartenfl. **40**: 123. *f. 44* (1891). — Koehne, D. Dendr. 548 (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 42. *pl. 12. f. 4–8. pl. 15. f. 30–31* (1898).

L. Kamtschatica, hort., ex Dippel.
L. phyllomache, hort., ex Dippel.
L. Savranica, hort. (hort. Spaeth!).

Sometimes cultivated (St. Petersburg, ex Regel *l. c.* and in herb!, Arnold Arboretum, etc.).

AA. Peduncles 1.5–2.5 cm. long.
B. Leaves pubescent beneath, elliptic to ovate, of firm texture; corolla 14 mm. long.

var. **Kansuensis**, Batalin in herb.

China: Kansu (Potanin!).

BB. Leaves almost glabrous or slightly pubescent beneath, elliptic to ovate-lanceolate; corolla scarcely 10 mm. long.

var. **Govaniana**, var. nov.

L. Govaniana, Wallich, Cat. no. 481 (1828), nom. nud. — De Candolle, Prodr. **4**: 337 (1830).
L. Orientalis, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 170 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 15 (1882). — Collett, Fl. Siml. 225 (1902).

Himalayas: Kashmir to Kumaon (Edgeworth, Jacquemont, Falconer, Duthie, Clarke). Afghanistan (Aitchison).

81. L. DISCOLOR, Lindley, Bot. Reg. **30**: 33, in note (1844); **33**. *pl. 44* (1847). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 171 (1858). — K. Koch, Dendr. **2**^{1}: 33 (1872). — Dippel, Handb. Laubholzk. **1**: 247. *f. 159* (1889). — Koehne, D. Dendr. 548 (1893).

L. Orientalis discolor, Clarke in Hooker, Fl. Brit. Ind. **3**: 15 (1882).

Himalayas: Kashmir (Brandis). Afghanistan (Aitchison, Duthie). — Rarely cultivated (Garden of Hort. Soc. London, ex Lindley *l. c.* and in herb!, Muenden).

82. **L. Kachkarovii**, spec. nov.

L. Orientalis Kachkarovii, Batalin, Act. Hort. Petrop. **14**: 171 (1895).

Tibet: between Tatsienlu and Batang (Kachkarov, ex Batalin).

Though I have seen no specimen of this Lonicera, the detailed description of Batalin shows that it certainly must be considered specifically distinct from *L. Orientalis* if *L. discolor* is allowed to stand.

83. L. RETUSA, Franchet, Jour. de Bot. **10**: 313 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 210 (1900).

China: Szechuen (Farges!).

84. L. KABYLICA, "Rehder, nov. sp.", Battandier, Bull. Soc. Bot. France. **49**: 290 (1902).

L. arborea, Battandier, Flor. Algérie **2**: 387 (1888), not Boissier. — Debeaux, Flor. Kabyl. 164 (1894).
L. arborea Kabylica, Battandier, Bull. Soc. Bot. France **43**: 479 (1896).

Upright much-branched glabrous shrub with gray branches; young branchlets sparingly glandular toward the end. Leaves short-petioled, rhombic-ovate and acute, or ovate to oval and obtusish and mucronulate, 1.5–3 cm. long, cuneate at the base, dark green above, glaucescent and reticulate beneath, glabrous. Flowers in the axils of the upper leaves on 2–3 mm. long peduncles; bracts subulate, half as long as ovaries, sparingly glandular like the bractlets and calyx teeth; bractlets connate into a truncate cupula about one-third as high as the ovaries; ovaries ovate, 2–3 mm. high, connate only at the base, calyx teeth ovate or ovate-lanceolate, acute, about 1 mm. long; corolla two-lipped (?pale violet), about 12 mm. long, glabrous outside, tube gibbous, villous within, shorter than limb; upper lip with oval lobes, the outer ones half as long as the limb, the inner ones shorter; stamens shorter than limb; filaments pilose below the middle, anthers linear-oblong; style as long as the stamens, pilose; fruit

bluish-black (becoming yellow according to Debeaux?). — *Plate 3. f. 8–10.*

North Africa: Kabylia (Kralik, Letourneux, Battandier!).

85. L. NERVOSA, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 39; Mél. Biol. **10**: 62 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 365 (1888). — Rehder, Mitt. Deutsch. Dendr. Ges. **3**: 44 (1894).

Caprifolium nervosum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Kansu (Przewalski! Potanin, Ladygin, no. 481); Hupeh (Henry, no. 6862). Rarely cultivated (Arnold Arboretum, Goettingen, Kew). — *Plate 16.*

In wild specimens I have found the bractlets always connate into a cupula, but on cultivated plants they are often in distinct pairs and sometimes ovate-lanceolate in shape.

86. L. TSCHONSKII, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 39; Mél. Biol. **10**: 61 (1877). — Franchet & Savatier, Enum. Pl. Jap. **2**: 652 (1879).

L. Brandtii, Franchet & Savatier, *l. c.* **2**: 385 (1879).
Caprifolium Tschonoskii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Caprifolium Brandtii, Kuntze, *l. c.*

Japan: Hondo (Tchonoski! Rein, Savatier no. 2889).

L. Brandtii does not differ from *L. Tschonoskii;* the stamens, which are described as glabrous by Maximowicz and densely pilose below by Franchet, are pilose below the middle, but in Maximowicz's specimens, which have only flower buds, the filaments have not yet attained their full length, and seem to be glabrous, though they are really hairy at their very base. — *Plate 17.*

87. L. NIGRA, Linné, Spec. Pl. **1**: 173 (1753). — Jacquin, Fl. Austr. Ic. **4**: 7. *pl. 314* (1776). — Aiton, Hort.

Kew. **1**: 230 (1789). — Schmidt, Oester. Baumz. **2**: 58. *pl. 110* (1794). — Persoon, Syn. Pl. **1**: 213 (1805). — Guimpel, Abb. Deutsch. Holzgew. **1**: 18. *pl. 7* (1815). — Bertoloni, Fl. Ital. **2**: 563 (1835). — Loudon, Arb. Frut. Brit. **2**: 1053 (1838), excl. var. — Grenier & Godron, Fl. France. **2**: 11 (1850). — Reichenbach, Ic. Fl. Germ. **11**: 86. *pl. 1174. f. 3.* (1855). — Pokorny, Oester. Holzpfl. 159. *pl. 30. f. 520–522* (1864). — Willkomm & Lange, Prodr. Fl. Hisp. **2**: 333 (1870). — K. Koch, Dendr. **2**^{1}: 28 (1872). — Arcangeli, Comp. Fl. Ital. 318 (1882). — Dippel, Handb. Laubholzk. **1**: 229 (1889). — Koehne, D. Dendr. 548 (1893). — Bubani, Fl. Pyren. **2**: 332 (1900). — Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 88 (1901). — Penkowsky, Derev. Kust. Ross. **3**: 14 (1901). — Schneider, Dendr. Winterstud. 226. *f. 203* (1903).

***Caprifolium roseum*, Lamarck, Fl. Franç. 3**: 368 (1778).

***Xylosteum nigrum*, Medicus, Beitr. Pflanzenanat. 97 (1799). — Dumont de Courset, Bot. Cult. 2**: 575 (1802). — Roehling, Deutschl. Fl. ed. 2. **2**: 176 (1812). — Fuss, Fl. Transsylv. Exc. 284 (1866).

***Chamaecerasus nigra*, Delarbre, Fl. d'Auvergne ed. 2. 130 (1800).**

? *L. Xylosteum nigra*, Loiseleur Deslongchamps in Duhamel, Trait. Arb. Arbust. 1: 52 (1801).

? *L. Xylosteum δ melanocarpa*, De Candolle, Prodr. 4: 335 (1830).

***L. Carpatica*, Kitaibel, Linnaea 32**: 430 (1863).

***L. coerulea*, Kitaibel, *l. c.*, not Linné.**

***Euchylia nigra*, Dulac, Fl. Haut.-Pyrén. 463 (1867).**

***Caprifolium nigrum*, Kuntze, Rev. Gen. Pl. 1**: 274 (1891).

***L. barbinervis*, Komarov, Act. Hort. Petrop. 18**: 426 (1901).

Mountains of middle and south Europe (Ehrenberg, Spenner, A. Braun, Engler, Schur, Bourgeau et al.). Korea (Komarov).

I am unable to find any difference between Komarov's *L. barbinervis* and typical *L. nigra*, not even to distinguish it as a form or variety. The following forms, which differ but slightly from the type, have been distinguished: —

AA. Leaves not ciliate.

B. Leaves glabrous except on the midrib beneath.

Typical form.

L. nigra f. glabrescens, Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 88 (1901).

f. PYRENAICA, Dippel, Handb. Laubholzk. **1**: 229 (1889.) — Zabel, *l. c.* **10**: 89 (1901).

This form differs from the type by smaller flowers and smaller leaves, dark bluish-green above. *L. nigra angustifolia*, hort. probably belongs here.

f. VIRESCENS, F. Gérard, Rev. de Bot. **8**: 121 (1890).

A form with greenish fruits. — Vogesen, " au Ballon de Soultz " (Kirchleger, ex Gérard).

BB. Leaves sparingly pubescent beneath and densely villous along the midrib; young branchlets, petioles and peduncles puberulous.

f. TRICHOTA, Beck, Fl. Nieder-Oester. **2**: 1132 (1893).

L. nigra puberula, Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 88 (1901).

f. LATIFOLIA, Zabel, *l. c.* **10**: 89 (1901).

Differs from the preceding form by the larger leaves, to 3.5 cm. broad on the flowering branches, and pubescent even along the midrib above.

f. GRANDIBRACTEATA, Zabel, *l. c.*

An abnormal form with leafy bracts exceeding the calyx.

AA. Leaves ciliate; bracts twice as long as the four distinct bractlets.

var. Berolinensis, nom. nov.

L. nigra β., Koehne, D. Dendr. 548 (1893).

Leaves acute to acuminate, sparingly ciliate and very sparingly hairy beneath, not villous along the midrib, the lower truncate at the base; bractlets about one-fourth as long as ovary, distinct.

Berlin, Bot. Gard. (in herb. Koehne!).

88. L. LANCEOLATA, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**: 177 (1824). — Sprengel, Syst. Veg. **4**^{2}: 83 (1827). — De Candolle, Prodr. **4**: 334 (1830).

L. decipiens, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 170 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 14 (1882). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 361 (1888).
Caprifolium decipiens, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Nepal to Botan (Hooker, Elwes). Tibet (Hobson, Soulié, nos. 109, 164). China: Yunnan (Delavay, nos. 2090, 2874); Szechuen (Faber, no. 250); Shensi (Giraldi, nos. 127, 129, 130).

Sect. 3. **COELOXYLOSTEUM**, sect. nov.

Lonicera § *Chamaecerasi*, De Candolle, Prodr. **4**: 335 (1830), in part.

This section contains 14 Old World species chiefly from eastern and central Asia, north and west of the Himalaya Mountains; only three occur also in Europe and one of them extends to North Africa. They do not exhibit such a wide range of variation as the species of the preceding section, but form a rather homogenous group. Even the two subsections into which the section can be divided easily are distinguished only by rather slight characters and show their close relation by numerous hybrids which they produce with each other in cultivation. From the two preceding sections it differs chiefly in the hollow branches and the absence of the tendency of the ovaries to unite and forms thus a connection with the following sections with which it has these characters in common, while in general

habit the affinity of this group is with the preceding sections.

A. Flowers pink to white, not fading to yellow; bractlets separate or only slightly connate at the base; leaves and bractlets glabrous or puberulous, or sometimes villous. 16. Subsect. TATARICAE.

AA. Flowers white or yellowish-white, rarely tinged with red, fading to yellow; bractlets usually more or less connate, sometimes separate; pubescence pilose or villous, rarely wanting.
17. Subsect. OCHRANTHAE.

Subsect. 16. **Tataricae**, subsect. nov.

A group of four rather variable species distributed from the Altai Mountains to the Ural and through Persia and Asia Minor to Greece, reappearing again in Spain and North Africa. Medium-sized or large shrubs with slender branches and usually rather small, glabrous or sometimes villous foliage; flowers mostly in the middle and upper part of the branches; bracts subulate, bractlets usually small, all distinct or connate only at the base; corolla two-lipped, usually glabrous without, pink or carmine to white; stamens shorter than limb; style hairy or nearly glabrous; fruit red; seed 2–3 mm. long, punctulate.

A. Peduncles 2–4 times as long as petioles.

B. Lateral lobes of the upper lip of the corolla separated to the base of the limb and spreading; corolla to 2 cm. long, white to carmine, with not or slightly gibbous tube; bractlets usually ovate, not or slightly connate at the base; leaves subcordate or rounded at the base, mostly acute, 3–6 cm. long, glabrous or rarely puberulous. 89. *L. Tatarica*, Linn.

BB. Lateral lobes of the upper lip of the corolla separated one-half or two-thirds, upright; the two bractlets of each flower more or less connate at the base; leaves 1.5–4 cm. long.

C. Leaves truncate or subcordate at the base, obtuse or rarely acutish, broadly oval to elliptic, puberulous along the midrib beneath or puberulous throughout; corolla distinctly gibbous; bractlets ovate, little shorter than ovaries; upper peduncles shorter than lower ones, often but little longer than petioles. 90. *L. floribunda*, Boiss. & Buhse.

CC. Leaves rounded or narrowed at the base, rarely subcordate, acute or sometimes obtuse, broadly ovate to elliptic, glabrous or puberulous, pale bluish or grayish-green; corolla slightly or scarcely gibbous at the base; bracts suborbiculate, about one-third as long as ovaries; all peduncles of equal length, about half as long as leaves.
91. *L. Korolkovii*, Stapf.

AA. Peduncles as long as petioles or shorter; bractlets about one-third as long as ovaries; corolla minutely pubescent without, upper lip divided about one-third; leaves broadly ovate to ovate-oblong, obtuse, rarely acute, 1.5–4 cm. long, more or less puberulous or villous.
92. *L. arborea*, Boiss.

89. L. Tatarica, Linné, Spec. Pl. **1**: 173 (1753).—Pallas, Fl. Ross. 55. *pl. 36* (1784).—Aiton, Hort. Kew. **1**: 236 (1789).—Schmidt, Oester. Baumz. **2**: 59. *pl. 111* (1794).—Ker, Bot. Reg. **1**. *pl. 31* (1815).—Guimpel, Abb. Fremd. Holzgew. 111. *pl. 87* (1825).—De Candolle, Prodr. **4**: 335 (1830).—Loudon, Arb. Frut. Brit. **2**: 1052. *f. 811, 812* (1838).—Kirillow, Lonic. Russ. Reich. 41 (1849).—Reichenbach, Ic. Fl. Germ. **17**: 86. *pl. 1174. f. 4, 5* (1855).—Pokorny, Oester. Holzpfl. 158. *pl. 30. f. 517–519* (1864).—K. Koch, Dendr. **2**^{1}: 26 (1872).—Regel, Russk. Dendr. **3**: 140 (1873).—Dippel, Handb. Laubholzk. **1**: 234 (1889).—Koehne, D. Dendr. 549 (1893).—Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 27. *pl. 14. f. 20, 21* (1898).—Penkowsky, Derev. Kust. Ross. **3**: 13 (1901).—Schneider, Dendr. Winterstud. 215. *f. 203* (1903).

Xylosteum cordatum, Moench, Meth. Pl. 502 (1794).
Xylosteum Tataricum, Dumont de Courset, Bot. Cult. **2**: 575 (1802).
Chamaecerasus Tataricus, Billiard, L'Hort. Franç. **1861**: 256 (1861).
Caprifolium Tataricum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Central Asia to South Russia: from the Altai to the Ural Mountains and to the Volga (Ehrenberg, Schrenk, C. A. Meyer, Regel, Potanin et al.).—Commonly cultivated as an ornamental shrub for its handsome flowers, and sometimes escaped from cultivation.

A. Young branchlets, peduncles, bracts and leaves glabrous or nearly so.

B. Leaves usually subcordate and acute; flowers carmine to white; fruits scarlet or rarely yellow.

Typical form.

The numerous garden forms which have been named and described differ but little except in the color and size of the flowers from the typical form, and they may be enumerated here in chronological order.

f. ALBA, Loiseleur-Deslongchamps in Duhamel, Trait, Arb. Arbust. ed. 2. **1**: 51 (1801). — Sweet, Hort. Brit. 195 (1827). — Regel, Gartenfl. **18**: 258. *pl. 627. f. 2* (1869).

L. Tatarica albiflora, De Candolle, Prodr. **4**: 335 (1830), excl. syn. — Loudon, Arb. Frut. Brit. **2**: 1053 (1838). — Dippel, Handb. Laubholzk. **1**: 235 (1889).

f. SIBIRICA, Persoon, Syn. Pl. **1**: 213 (1805.)

? *L. Sibirica*, Georgi, Geogr. Beschr. Russ. Reich. **3**: 779 (1800), nom. nud. — Hort., ex De Candolle, Prodr. **4**: 335 (1830).

? *L. punicea*, Sims, Bot. Mag. **51**. *pl. 2469* (1824). — Sprengel, Syst. Veg. 4^2: 83 (1827). — De Candolle, Prodr. **4**: 335 (1830). — Loudon, Arb. Frut. Brit. **2**: 1054 (1838). — Dippel, Handb. Laubholzk. **1**: 253. *f. 165* (1889).

? *Symphoria punicea*, Loudon, Hort. Brit. 80 (1830).

? *Xylosteum puniceum*, Rafinesque, New Fl. N. Am. **3**: 21 (1836).

? *Symphoricarpus puniceus*, Sweet, ex Loudon, Arb. Frut. Brit **2**: 1054 (1838).

? *Caprifolium puniceum*, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

L. Tatarica rubra, Sweet, Hort. Brit. 195 (1827).

L. Tatarica rubriflora, De Candolle, Prodr. **4**: 335 (1830). — Loudon, Arb. Frut. Brit. **2**: 1053 (1838).

L. Tatarica purpurea, Endlicher, Cat. Hort. Vindob. **1**: 459 (1842), nom. nud.

f. angustata, comb. nov.

L. angustata, Wenderoth, Flora 9^1: 357 (1828).

L. angustifolia, Wenderoth, Schrift. Nat. Wiss. Marburg **2**: 247 (1831), not Wallich.

L. Tatarica angustifolia, Kirchner, Arb. Musc. 434 (1864). — Dippel, Handb. Laubholzk. **1**: 235 (1889).

f. LUTEA, Loudon, Arb. Frut. Brit. **2**: 1053 (1838).

L. Tatarica xanthocarpa, Endlicher, Cat. Hort. Vindob. **1**: 459 (1842). — Zabel, Syst. Verz. Muenden 24 (1878).

f. LATIFOLIA, Loudon, Arb. Frut. Brit. **2**: 1053 (1838). — Dippel, Handb. Laubholzk. **1**: 235 (1889).

? *Xylosteum Tataricum grandiflorum*, Fischer, Cat. Jard. Gorenki 44 (1812), nom. nud.

L. Tatarica grandiflora rubra, Pepin, Rev. Hort. **6**: 109, *pl.* (1844).

L. Tatarica grandiflora, Jacques & Herincq, Man. Pl. Arb. Arbust. **2**: 146 (1850?).

L. Tatarica rubrissima, Carrière, Rev. Hort. **1867**: 260 (1867).

L. Tatarica speciosa, Carrière, Rev. Hort. **1868**: 392, *pl. f. 1* (1868).

L. Tatarica major, Jaeger, Ziergeh. 297 (1865).

L. Tatarica pulcherrima, Regel, Gartenfl. **18**: 258. *pl. 627. f. 5* (1869); Ind. Sem. Hort. Petrop. **1869.** apx. 19 (1870).

L. Tatarica splendens, Regel, Gartenfl. **18**: 258. *pl. 627. f. 1* (1869); Ind. Sem. Hort. Petrop. **1869.** apx. 19 (1870); Russk. Dendr. **3**: 140 (1873).

f. ELEGANS, Carrière, Rev. Hort. **1868**: 392, *pl. f. 2* (1868).

f. BICOLOR, Carrière, *l. c. f. 3.*

L. Tatarica discolor, Zabel, Syst. Verz. Muenden 24 (1878).

f. ROSEO-ALBA, Regel, Gartenfl. **18**: 258. *pl. 627. f. 3* (1869); Ind. Sem. Hort. Petrop. **1869**. apx. 19 (1870); Russk. Dendr. **3**: 140 (1873).

L. Tatarica albo-rosea, Dippel, Handb. Laubholzk. **1**: 235 (1889).

f. ROSEA, Regel, Gartenfl. **18**: 258. *pl. 627. f. 4* (1869); Russk. Dendr. **3**: 140 (1873).

f. BREVIPEDUNCULATA, Regel, Russk. Dendr. **3**: 141 (1873).

f. MICROPHYLLA, Lavallé, Arb. Segrez. 140 (1877), nom. nud.

f. PRAECOX, Lavallé, *l. c.*, nom. nud.

f. VARIEGATA, Zabel, Syst. Verz. Muenden 24 (1878), nom. nud.

f. ODORATA, Dippel, Handb. Laubholzk. **1**: 235 (1889).

L. Canadensis alba, hort., ex Dippel, *l. c.*

f. FENZLII, Dippel, *l. c.*

f. VIRGINALIS, Jaeger, Ziergeh. ed. 3. 208 (1889).

f. GRANDIBRACTEATA, Wolf, Gartenfl. **40**: 486. *f. 90* (1891).

f. PUNICEA, Nicholson, Hand-l. Arb. Kew **2**: 23 (1896), nom. nud.; ed. 2. 453 (1902).

f. SIBIRICA NANA, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 455 (1903), nom. nud.

f. VULGARIS, Zabel, *l. c.*

f. ERUBESCENS, Zabel, *l. c.*

f. **Leroyana,** comb. nov.

L. Orientalis Leroyana, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 453 (1903).
L. Tatarica, Louis Leroy, hort. ex Zabel, *l. c.*

BB. Leaves rounded or somewhat narrowed at the base, oval to oblong-ovate, 2–5 cm. long, sometimes bluish-green; flowers small.

C. Leaves usually rounded at the base, obtusish; flowers white or nearly so; style pubescent; fruit orange red.

var. PARVIFOLIA, Jaeger, Ziergeh. ed. 3. 208 (1889). — Rehder in Bailey, Cycl. Am. Hort. **2**: 941 (1900).

L. Pyrenaica, Willdenow, Berl. Baumz. 181 (1796), not Linné. — Borkhausen, Handb. Forstbot. **2**: 1045 (1803).
Xylosteum Pyrenaicum, Borkhausen, *l. c.* 1680, not Dumont de Courset.
L. parvifolia, Hayne, Dendr. Fl. 14 (1822). — Dippel, Handb. Laubholzk. **1**: 228 (1889). — Koehne, D. Dendr. 549 (1893).
L. Tatarica Pyrenaica, Regel, Ind. Sem. Hort. Petrop. **1863**: 22 (1863). — Zabel, Syst. Verz. Muenden 24 (1878).
L. Tatarica gracilis, Carrière, Rev. Hort. **1868**: 292, *pl. fig. 4* (1868).

Turkestan (Regel). — Sometimes cultivated (Arnold Arboretum, etc.).

CC. Leaves usually slightly narrowed at the base, oblong-ovate, acute; flowers pinkish; the upper lip usually not quite divided to the base; fruit red; low, compact shrub.

var. NANA, Alphand, Descr. Arb. Arbriss. 42 (1875). — Dippel, Handb. Laubholzk. **1**: 235 (1889).

? *Chamaecerasus ciliatus*, Billiard, L'Hort. Franç. **1861**: 256 (1861), nom. nud.
L. ciliata, hort., ex. Dippel. *l. c.*, not Muhlenberg.

AA. Branchlets, peduncles and bracts puberulous; leaves pubescent beneath, 2–4 cm. long, usually subcordate at the base; corolla puberulous without, tube slender, about as long as limb; style pubescent to the apex.

var. MICRANTHA, Trautvetter, Bull. Soc. Nat. Mosc. **39**[1]: 331 (1866).

L. micrantha, Regel, Act. Hort. Petrop. **5**: 609 (1878).
L. Tatarica puberula, Regel & Winkler, Act. Hort. Petrop. **6**: 305 (1880), in herb. Petersburg!
Caprifolium micranthum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Turkestan: Songaria (Regel, Schrenk!).
This variety was confounded afterwards by Regel with several hybrid garden forms, as the herbarium of the botanic garden at St. Petersburg shows. To these forms belong the plants cultivated under the name *L. micrantha;* the true var. *micrantha* seems not to be in cultivation. — *Plate 3. f. 11.*

90. L. FLORIBUNDA, Boissier & Buhse, Mém. Soc. Nat. Mosc. II. **12**: 107. *pl. 8.* (1860). — Boissier, Fl. Or. **3**: 7 (1875). — Dippel, Handb. Laubholzk. **1**: 230. *f. 146* (1889), in part. — Koehne, D. Dendr. 550 (1893), in part.

Caprifolium floribundum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Persia (Buhse! Bunge.)

Bunge collected this species in two forms, one being puberulous like the type, the other almost glabrous except a villous pubescence along the midrib of the under side of the leaves. — *Plate 3. f. 12. pl. 18, 19.*

91. L. KOROLKOVII, Stapf, Gard. & For. **7**: 34. *f. 4* (1894).

L. floribunda, Zabel, Gartenfl. **38**: 525 (1889), not Boissier & Buhse. — Dippel, Handb. Laubholzk. **1**: 230 (1889), in part. — Koehne, D. Dendr. 550 (1893), in part. — Rehder, Gartenfl. **42**: 104. *f. 19. 4–6* (1893).

L. Korolkovii floribunda, Nicholson, Dict. Gard. Suppl. 503 (1901).

L. floribunda typica rosea, grandiflora and *albescens*, Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 97 (1901).

L. floribunda Korolkovii, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 456 (1903).

Turkestan: Bokhara (Regel, Lipsky).

Originally described from plants cultivated at the Arnold Arboretum, which were received from the Arboretum Lavallé at Segrez where they had been raised from seed sent by Korolkow from Turkestan. There is little difference between the plant cultivated in European gardens as *L. floribunda* and the type; the latter has the leaves generally narrower, usually acute at both ends and seems less susceptible to severe frost. — *Plate 3. f. 13.*

var. **Zabelii**, comb. nov.

L. Zabelii, Rehder, Gartenfl. **42**: 104. *f. 19. 1–3* (1893).

L. floribunda Zabelii, Koehne, in herb., ex Rehder, *l. c.* — Koehne, Mitt. Deutsch. Dendr. Ges. **8**: 60 (1899).

L. floribunda glabrescens, Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 97 (1901).

L. floribunda glabrescens, rosea, pallida, and *alba*, Zabel, *l. c.*

Bokhara (Lipsky). — Sometimes cultivated (Goettingen, Muenden).

92. L. ARBOREA, Boissier, Bibl. Univ. Genéve II. **13**[1]: 409 (1838); Elench. Pl. Nov. It. Hisp. 55 (1838); Voy. Bot. Espagne **2**: 277. *pl. 82* (1839–45). — Willkomm & Lange, Prodr. Fl. Hisp. **2**: 333 (1870). — Koehne, D. Dendr. 551 (1893).

L. Xylosteum, Sibthorp, Fl. Graec. **3**: 18. *pl. 223* (1819), not Linné.

Xylosteum arboreum, Webb, It. Hisp. 42 (1838).

L. Turcomanica, Fischer & Meyer, Bull. Acad. Soc. Nat. Mosc. **2**: 156 (1839), nom. nud. — Trautvetter, Act. Hort. Petrop. **1**: 274 (1870). — Regel, Act. Hort. Petrop. **5**: 254 (1877).

L. nummularia, Fischer & Meyer, Bull. Acad. Soc. Nat. Mosc. **2**: 156 (1839), nom. nud.

L. Persica, Jaubert & Spach, Ill. Pl. Or. **1**: 132. *pl. 69* (1842–43). — Walpers, Rep. Bot. **6**: 4 (1846). — K. Koch, Dendr. **2**[1]: 27 (1872).

L. nummulariifolia, Jaubert & Spach, Ill. Pl. Or. **1**: 133. *pl. 70* (1842–43). — Walpers, Rep. Bot. **6**: 4 (1846). — Boissier, Flor. Or. **3**: 7 (1875). — Regel, Act. Hort. Petrop. **5**: 611 (1878). — Dippel, Handb. Laubholzk. **1**: 231. *f. 147* (1889). — Aitchison, Trans. Bot. Soc. Edinb. **18**: 126 (1891). — Halacsy, Consp. Fl. Graec. **1**: 700 (1901).

L. Xylosteum β *macrocalyx*, Regel, Bull. Soc. Nat. Mosc. **40**[1]: 2 (1867).

L. Turcomanica β *subvillosa*, Regel, Act. Hort. Petrop. **5**: 254 (1877).

L. Kurdistana, Schlechtendal, in herb.!, ex Regel, Act. Hort. Petrop. **5**: 611 (1878).

L. Turkestanica, Franchet, Ann. Sci. Nat. Bot. VI. **16**: 299 (1883), in herb. Paris!

? *L. Luschanii*, Stapf, Denkschr. Akad. Wiss. Wien **50**: 108 (1885).

Caprifolium arboreum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Caprifolium Nummularia, Kuntze, *l. c.*

Caprifolium nummulariifolium, Kuntze, *l. c.*

Caprifolium Turcomanicum, Kuntze, *l. c.*

L. nummulariifolia cordata, Post, Fl. Syr. Palest. 379 (1896).

L. incana, Decaisne, in herb. Paris!

South Europe: Spain (Boissier! Huber); Greece (ex Sibthorp and Halacsy); Candia (Reverchon). North Africa (Letourneux, Cosson). Asia Minor (Kotschy,

Sintenis). Persia (Kotschy, Haussknecht). Turkestan (Regel, Capus, Komarov). Afghanistan (Aitchison). — Sometimes cultivated (Goettingen, etc.).

The type of this very variable species occurs in Spain and North Africa. The Oriental form differs by the longer and slenderer tube of the corolla and the generally smaller leaves; it may be distinguished as var. **Persica** (Jaub. & Spach), var. nov.; to this variety belong all the synonyms quoted above except *Caprifolium arboreum* and *Xylosteum arboreum*.

Subsect 17. Ochranthae, Zabel, emend.

Lonicera § *Ochranthae*, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 458 (1903), excl. *L. Iberica*.

Lonicera § *Subsessiliflorae*, Zabel, *l. c.* 459, excl. his *L. Nummularia*.

A group of 10 species distributed from eastern Asia to the Himalayas and western Europe. It is closely allied to the preceding subsection from which it is chiefly distinguished by the yellowish or white flowers fading to yellow and by the pilose or villous pubescence. Upright medium-sized or large shrubs with rather slender branches more or less pilose or pubescent, rarely nearly glabrous; leaves of medium size; flowers usually in the lower or middle part of the branches; bracts subulate; bractlets about one-half or nearly as long as the ovaries; calyx conspicuous; corolla two-lipped, usually pubescent without, yellowish or white, fading to yellow; style pilose; fruit red, rarely yellow or orange with yellowish-brown seeds, or white with black seeds; seeds punctulate or rugulose, 2–4 mm. long.

A. Peduncles much longer than the petioles, 1–2.5 cm. long; fruit red, rarely yellow.

B. Ovaries glabrous; upper lip of corolla deeply divided; winter buds small with nearly glabrous scales; bractlets distinct.

C. Bractlets usually small, glabrous or with marginal glands as the calyx; corolla glabrous without, usually 1.5-2 cm. long, the upper lip divided one-half to two-thirds; peduncles 1.5–2 cm. long, slightly pubescent; leaves ovate-lanceolate, acuminate, glabrous above, pubescent beneath, 6–10 cm. long. 93. *L. Ruprechtiana*, Reg.

CC. Bractlets usually as long as ovaries, ciliate; corolla pubescent without, about 1.5 cm. long, upper lip divided nearly to the base with the outer lobes spreading; leaves ovate-elliptic, abruptly and shortly acuminate, pubescent above, densely villous beneath, 3–5 cm. long.

94. *L. Morrowii*, Gray.

BB. Ovaries glandular and sometimes pilose, rarely glabrous; upper lip divided one-fourth or one-third; winter buds rather large, with ovate to lanceolate pubescent or long-ciliate scales.

C. Bractlets distinct or only slightly connate at the base, about one-half as long as the glandular or rarely glabrous ovary.

D. Leaves broadly ovate to obovate or oblong, acute or shortly acuminate, usually pubescent on both sides, 3–7 cm. long; peduncles 1–2 cm. long; corolla whitish, often tinged with red; bractlets broad, rounded or sometimes truncate; fruit dark red, rarely yellow.

95. *L. Xylosteum*, Linn.

DD. Leaves rhombic-ovate to ovate-lanceolate, long acuminate, 6–12 cm. long, more or less pilose on both sides; peduncles 1.5–2.5 cm. long; corolla yellowish-white; bractlets ovate, usually distinct; ovaries usually ovoid; fruit bright cherry red.

96. *L. chrysantha*, Turcz.

CC. Bractlets of each flower connate, one-half to three-fourths as high as the glandular and pilose ovary; corolla yellowish, pubescent without; anthers pilose; peduncles 1.5–2.5 cm. long; leaves ovate or rhombic-ovate to obovate, acuminate, to 6–10 cm. long, nearly glabrous above, villous-pubescent and glaucescent beneath.

97. *L. Koehneana*, Rehd.

AA. Peduncles short, rarely exceeding the petioles, 3–10 mm. long; bractlets more or less connate, half as high or as high as ovaries.

B. Calyx campanulate, divided about one-half into ovate to lanceolate, acute teeth; corolla glabrous or pubescent without, 18–20 mm. long, with very short scarcely gibbous tube; upper lip divided about two-thirds; stamens half as long as limb, bractlets usually connate only at the base; leaves ovate-lanceolate to lanceolate, long acuminate, attenuate at the base, 5–8 cm. long, sparingly pubescent beneath; fruit dark red.

98. *L. Maackii*, Rupr.

BB. Calyx truncate or with very short rounded or broadly ovate lobes; corolla pubescent without.

C. Calyx campanulate, truncate or indistinctly lobed, splitting to the base; corolla with short gibbous tube.

D. Leaves acuminate, lanceolate, rounded at the base, 6–10 cm. long, sparingly pubescent above, more densely beneath; bractlets half as long as ovaries; calyx usually splitting only on one side; corolla 15 mm. long; fruit orange. 99. *L. deflexicalyx*, Batal.

DD. Leaves obtuse, mucronulate, rarely acutish, 2.5–4 cm. long; calyx splitting into two parts.

E. Bractlets as long as ovaries; corolla 18-20 mm. long; leaves broadly ovate, mucronulate, rounded or subcordate at the base, pilose beneath, chiefly on the veins. 100. *L. trichosantha*, Bur. & Franch.

EE. Bractlets half as long as ovaries; corolla 12–15 mm. long; leaves obovate or oval, puberulous, becoming glabrous, narrowed or rounded at the base. 101. *L. ovalis*, Batal.

CC. Calyx cupulate with short rounded or triangular-ovate lobes, not splitting; corolla yellowish, 1–2.5 cm. long, with usually slightly or scarcely gibbous, curved tube often nearly as long as limb; bractlets half as long or as long as ovaries, in wholly or partly connate pairs; leaves broadly ovate to oblong-ovate, rarely obovate, acute, rarely shortly acuminate or obtusish, 2–7 cm. long, more or less pubescent; fruit white, with purplish-black seeds. 102. *L. quinquelocularis*, Hardw.

93. L. Ruprechtiana, Regel, Gartenfl. **19**: 68. *pl. 645;* Ind. Sem. Hort. Petrop. **1869**. apx. 19 (1870). — K. Koch, Dendr. **2**[1]: 25 (1872). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 45; Mél. Biol. **10**: 70 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 366 (1888). — Dippel, Handb. Laubholzk. **1**: 235 (1889). — Koehne, D. Dendr. 550 (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 28. *pl. 14. f. 22, 23* (1898). — Penkowsky, Derev. Kust. Ross. **3**: 11 (1901).

Xylosteum chrysanthum β subtomentosum, Ruprecht, Bull. Acad. Sci. St. Pétersb. **15**: 369 (1857).

L. chrysantha subtomentosa, Maximowicz, Prim. Fl. Amur. 136 (1859). — Herder, Bull. Nat. Soc. Mosc. **37**[1]: 203 (1864).

Caprifolium Ruprechtianum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
L. Ghiesbreghtiana, hort. Berol., in herb. Berol.!

Northeastern Asia: Mandshuria (Maack! Maximowicz, Wilford); China, Shingking (Webster, Ross, James). — Sometimes cultivated (Arnold Arboretum, etc.).

var. XANTHOCARPA, Zabel, Syst. Verz. Muenden 24 (1878), nom. nud.

This form differs from the type by yellow fruits, smaller more yellowish flowers and more densely pubescent leaves.

94. L. MORROWII, Gray in Perry, Narr. Exp. Chin. Jap. **2**: 313 (1856). — Franchet & Savatier, Enum. Pl. Jap. **1**: 205 (1875); **2**: 387 (1879). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 45; Mél. Biol. **10**: 70 (1877). — Zabel, Gartenfl. **30**: 369 (1881). — Dippel, Handb. Laubholzk. **1**: 224. *f. 142* (1889). — Koehne, D. Dendr. 550 (1893).

L. chrysantha, Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865–66); Prol. Fl. Jap. 158 (1866–67), not Turczaninow.
L. Xylosteum, Miquel, *l. c.*, not Linné.
Caprifolium Morrowii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Japan: Hondo (Williams & Morrow! Tschonoski, Wright, Oldham, Maximowicz, Faurie); Hokkaido (Sargent, Miyabe). — Sometimes cultivated (Arnold Arboretum, etc.). There is also a form with yellow fruits in cultivation.

95. L. XYLOSTEUM, Linné, Spec. Pl. **1**: 174 (1753). — Aiton, Hort. Kew. **1**: 232 (1789). — Schmidt, Oester. Baumz. **2**: 60. *pl. 113* (1794). — Smith, Engl. Bot. **13**. *pl. 916* (1801). — Persoon, Syn. Pl. **1**: 213 (1805.) — Guimpel, Abb. Deutsch. Holzgew. **1**: 19. *pl. 9* (1815). — De Candolle, Prodr. **4**: 335 (1830). — Bertoloni, Fl. Ital. **2**: 564 (1835). — Loudon, Arb. Frut. Brit. **2**: 1054. *f. 816* (1838). —

Spenner in Nees von Esenbeck, Gen. Plant. Fl. Germ. fasc. 21. *pl. 402. f. 1–5, 10–20, 24–29* (1840).—Reichenbach, Ic. Fl. Germ. **17**:86. *pl. 1174. f. 1, 2* (1855).—Pokorny, Oester. Holzpfl. 159. *pl. 30. f. 513–516* (1864).—K. Koch, Dendr. **2**[1]:22 (1872).—Arcangeli, Comp. Fl. Ital. 318 (1882).—Dippel, Handb. Laubholzk. **1**:228 (1889).—Koehne, D. Dendr. 551 (1893).—Wolf, Isv. St. Peterb. Lesn. Inst. **3**:30. *pl. 25. f. 24, 25* (1898).—Britton & Brown, Ill. Fl. N. U. S. Can. **3**:241. *f. 3466* (1898).—Bubani, Fl. Pyren. **1**:333 (1900).—Penkowsky, Derev. Kust. Ross. **3**:12 (1901).—Schneider, Dendr. Winterstud. 216. *f. 204* (1903).

***Caprifolium dumetorum*, Lamarck, Flor. Franç. 3 : 367 (1778).**
***L. rubra*, Gilibert, Fl. Lith. 1 : 6 (1781), ex Ind. Kew.**
***Caprifolium Xylosteum*, Gaertner, De Fruct. Sem. Pl. 1 : 135 (1788).—Kuntze, Rev. Gen. Pl. 1 : 274 (1891).**
***L. dumetorum*, Moench, Meth. Pl. 503 (1794).**
***Chamacerasus dumetorum*, Delarbre, Fl. d'Auvergne ed. 2. 131 (1800).**
***Xylostèum dumetorum*, Dumont de Courset, Bot. Cult. 2 : 575 (1802).—S. F. Gray, Nat. Arr. Brit. Pl. 2 : 487 (1821).—Fuss, Fl. Transsylv. Exc. 284 (1866).**
***Xylosteum vulgare*, Borkhausen, Handb. Forstbot. 2 : 1680 (1803).—Fischer, Cat. Jard. Gorenki 44 (1812).—Ruprecht, Bull. Phys. Math. Acad. Sci. St. Pétersb. 15 : 369 (1857).**
***L. vulgaris*, Roehling, Deutschl. Fl. ed. 2. 2 : 176 (1812).**
***L. pubescens*, Stokes, Bot. Mat. Med. 1 : 372 (1812).**
***Chamaecerasus Xylosteum*, Billiard, L'Hort. Franç. 1861 : 256 (1861).**
***L. Pyrenaica*, Kitaibel, Linnaea 32 : 430 (1863), not Linné.**
***Euchylia villosa*, Dulac, Fl. Haut.-Pyrén. 464 (1867).**
***L. villosa*, hort., ex K. Koch, Dendr. 2[1] : 24 (1872).**
L. Royleana*, hort., *l. c.
***L. ochroleuca*, St. Lager, Ann. Soc. Bot. Lyon 7 : 129 (1880).**

Europe, Asia Minor and western Siberia, reaching the Altai Mountains (numerous collectors).—Sometimes cultivated (Arnold Arboretum etc.); escaped from cultivation in eastern North America.

A variable species; the most distinct variety is the following which is quite glabrous except the ciliate bractlets:—

var. **leiophylla**, var. nov.

L. leiophylla, Kerner, Oester. Bot. Zeitschr. **20**: 322 (1870).
L. Pyrenaica, Kitaibel, Linnaea **32**: 430 (1863), according to Kerner, *l. c.*, not Linné.
? *L. alpigena leiophylla*, Zabel, in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 453 (1903).

Hungary (Simonkai.)

f. LUTEA, Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**: 52 (1801).

L. Xylosteum xanthocarpa, De Candolle, Prodr. **4**: 335 (1830).
L. Xylosteum crococarpa, Murr, Deutsche Bot. Monats. **12**: 32 (1894).

This form differs by yellow fruits. The other named forms may be enumerated here chronologically as it seems not advisable to attempt a classification of these partly insufficiently described forms without having examined type specimens, as far as they exist.

f. RUBRA, Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**: 52 (1801). — De Candolle, Prodr. **4**: 335 (1830).

f. COTINIFOLIA, C. A. Meyer, Beitr. Pflanzenk. Russ. Reich. **5**: 51 (1848). — Walpers, Ann. Bot. Syst. **1**: 365 (1849). — Kirillow, Lonic. Russ. Reich. 38 (1849).

f. VULGARIS, Regel, Bull. Phys. Math. Acad. Sci. St. Pétersb. **15**: 221 (1857). — Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 91 (1901).

f. TYPICA, Regel, Bull. Soc. Nat. Mosc. **40**^{1}: 2 (1867); Russk. Dendr. **3**: 139 (1873).

f. BREVIPEDUNCULATA, Regel, Bull. Soc. Nat. Mosc. **40**^{1}: 3 (1867). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 31 (1898).

f. MOLLIS, Regel, Ind. Sem. Hort. Petrop. **1867**, apx. 31 (1868); Russk. Dendr. **3**: 139 (1873).

L. implexa, hort. Potsdam, ex Regel *l. c.*, not Aiton.
L. Xylosteum villosa, Zabel, Syst. Verz. Muenden 23 (1878).
L. Xylosteum subcordata, Zabel, Mitt. Deutsche Dendr. Ges. **10**: 91 (1901).

f ELLIPTICA, Beck, Ann. Nat. Hofmus. Wien **4**: 155 (1890); Flor. Niederoester. 1132 (1893).

f. SYRINGIFOLIA, Beck, Flor. Niederoester. 1132 (1893).

f. THURINGIACA, Zabel, Mitt. Deutsche Dendr. Ges. **10**: 91 (1901).

f. GLABRESCENS, Zabel, *l. c.* 92.

f. COMPACTA, Zabel, *l. c.*

f. STENOPHYLLA, Zabel, *l. c.*

f. LONGIPEDUNCULATA, Zabel, *l. c.*

f. GLABERRIMA "Kirillow", Zabel, *l. c.*

96. L. CHRYSANTHA, Turczaninow, Bull. Soc. Nat. Mosc. **11**: 93 (1838), nom. nud; **18**: 304 (1845). — Ledebour, Fl. Ross. **2**: 388 (1844). — Kirillow, Lonic. Russ. Reich. 23 (1849). — Maximowicz, Prim. Fl. Amur. 135 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 43; Mél. Biol. **10**: 68 (1877). — Regel, Gartenfl. **12**: 211. *pl. 404* (1863). — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 201. *pl. 1. f. 5, g, h* (1864); **53**: 16 (1878). — K. Koch, Dendr. **2**[1]: 24. (1872). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 360 (1888). — Dippel, Handb. Laubholzk. **1**: 222. *f. 141* (1889). — Koehne, D. Dendr. 550 (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 29. *pl. 14. f. 26, 27* (1898). — Penkowsky, Derev. Kust. Ross. **3**: 10 (1901).

L. Xylosteum, Georgi, Bem. Reis. Russ. Reich. **1**: 201 (1775), not Linné.

Xylosteum gibbiflorum, Ruprecht & Maximowicz, Bull. Phys. Math. Acad. Sci. St. Pétersb. **15**: 136 (1857). — Ruprecht, Bull. Phys. Math. Acad. Sci. St. Pétersb. **15**: 368 (1857).

L. Xylosteum chrysantha, Regel, Bull. Phys. Math. Acad. Sci. St. Pétersb. **15**: 221 (1857).

Caprifolium chrysanthum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

L. gibbiflora, Maximowicz, in herb.!, not Dippel.

Northeastern Asia: Dahuria (Turczaninow!); Mandshuria (Radde, Maximowicz, Korshinsky); Mongolia (David); China: Chihili (Tatarinow, Moellendorf); Saghalin (Fr. Schmidt, Glehn). — Sometimes cultivated (Arnold Arboretum, etc.).

var. LONGIPES, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 44; Mél. Biol. **10**: 68 (1877).

China: Kansu (Przewalski! Potanin, Ladygin). Japan: Hokkaido (Miyabe); Hondo (Faurie).

Differs by 2–3 cm. long peduncles and the sparser and longer pubescence of the leaves.

The following three forms are known to me only from cultivated plants: —

f. REGELIANA, Zabel, Syst. Verz. Muenden 24 (1878).

L. Regeliana, Kirchner, Arb. Musc. 433 (1864).

Differs from the type only in the smaller flowers.

f. **villosa**, Hort. Bot. Petrop.

Leaves smaller, less acuminate; leaves on both sides and branchlets villous-pubescent. Fruiting specimens were received from Mr. M. L. de Vilmorin of Paris and from Mr. J. Kesselring of St. Petersburg.

f. **Turkestanica**, hort.

Differs in the rather broad leaves being of thickish texture, glaucescent beneath and nearly glabrous except a few

scattered hairs on the veins, midrib on the upper side densely pilose; branchlets nearly glabrous. Fruiting specimens of this form were received from Mr. J. Kesselring and from Mr. E. Wolf of St. Petersburg.

97. L. KOEHNEANA, Rehder in Sargent, Trees & Shrubs, **1**: 41. *pl. 21* (1902).

China: Szechuen (Henry, nos. 5613! 5894! Farges, no. 1204); Shensi (Giraldi, nos. 124, 126); Hupeh (Henry, no. 6052, E. H. Wilson, no. 2093); Yunnan (Delavay, no. 444).

98. L. MAACKII, Maximowicz, Prim. Fl. Amur. 136 (1859); Bull. Acad. Sci. St. Pétersb. **24**: 42; Mél. Biol. **10**: 66 (1877). — Herder, Bull. Soc. Nat. Mosc. **37**[1]: 204. *pl. 2. f. 4* (1864); **53**[1]: 19 (1878). — Regel, Gartenfl. **33**: 225. *pl. 1162* (1884). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 364 (1888). — Dippel, Handb. Laubholzk. **1**: 241. *f. 153* (1889). — Koehne, D. Dendr. 551. *f. 96, L* (1893). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**: 21. *pl. 6, 14, f. 18, 19* (1898). — Penkowsky, Derev. Kust. Ross. **3**: 12 (1901).

Xylosteum Maackii, Ruprecht, Bull. Phys. Math. Acad. Sci. St. Pétersb. **15**: 369 (1857). — Maack, Putech. Amur. 122. *pl.* (1857).
Caprifolium Maackii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Mandshuria (Maximowicz!); Shingking (Webster, Ross); Kiangsu (Faber); Kiangsi (Maries); Fokien (Fortune); Hupeh (Henry, E. H. Wilson, no. 226); Shensi (Giraldi, no. 131); Yunnan (Henry, no. 10016A, Delavay, no. 786). Japan: Hondo (Tschonoski, Faurie, nos. 13111, 13520). — Sometimes cultivated (Arnold Arboretum, etc.).

f. **podocarpa**, Franchet in herb.!

Has the ovaries, together with the bractlets, on a short, stalk-like elongation raised above the bracts which gives

the impression of a somewhat abnormal form, though it occurs in most Chinese specimens.

99. L. DEFLEXICALYX, Batalin, Act. Hort. Petrop. **12**:173 (1892).—Wolf, Gartenfl. **42**:332 (1893).

China: Szechuen (Potanin! Baresowsky, Soulié, no. 128); Yunnan (Delavay, nos. 3059, 4496). Tibet (Soulié, no. 404).— Rarely cultivated (Arnold Arboretum, Fruticetum of Mr. M. L. de Vilmorin at Les Barres).

100. L. TRICHOSANTHA, Bureau & Franchet, Jour. de Bot. **5**:48 (1891).—Bois, Jour. Soc. Hort. France IV. **1**:210 (1901).

Tibet (ex Bureau & Franchet).

101. L. OVALIS, Batalin, Act. Hort. Petrop. **14**:170 (1895).

China: Szechuen (Potanin! Pratt, nos. 188, 235).— *Plate 20.*

102. L. QUINQUELOCULARIS, Hardwick, As. Research. Soc. Bengal **6**:351 (1799).—Wallich in Roxburgh, Fl. Ind. ed. 2. **2**:174 (1824).—De Candolle, Prodr. **4**:338 (1830).—Hooker f. & Thomson, Jour. Linn. Soc. **2**:169 (1858).—Brandis, Forest Fl. 225 (1874).—Aitchison, Jour. Linn. Soc. **18**:65 (1881).—Zabel, Gartenfl. **30**:369 (1881).—Clarke in Hooker, Fl. Brit. Ind. **3**:14 (1882).—Wawra, It. Princ. S. Coburg. 115 (1883).—Buser in Boissier, Fl. Or. Suppl. 276 (1888).—Forbes & Hemsley, Jour. Linn. Soc. **23**:365 (1888).—Dippel, Handb. Laubholzk. **1**:239. *f. 152* (1889).—Koehne, D. Dendr. 552 (1893).—Collett, Fl. Siml. 224. *f. 69* (1902).

? *L. Xylosteum alba*, Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**:52 (1801).

L. diversifolia, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**: 178 (1824). — De Candolle, Prodr. **4**: 334 (1830). — Lindley, Bot. Reg. **29**, misc. 78; **30**. *pl. 33* (1844). — Hooker, Ic. Pl. **9**. *pl. 807* (1852). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 95 (1858). — K. Koch, Dendr. **2**[1]: 23 (1872). — Dippel, Handb. Laubholzh. **1**: 241. *f. 154* (1889). — Koehne, D. Dendr. 551 (1893).

L. Royleana, Wallich, Cat. no. 478 (1828), nom. nud.

L. diversifolia β *Royleana*, De Candolle, Prodr. **4**: 334 (1830). — Hooker, Ic. Pl. **9**: 807 (1852).

? *L. Xylosteum* β *leucocarpa*, De Candolle, Prodr. **4**: 335 (1830).

L. Xylosteum brachypoda, Schlechtendal, Linnaea **31**: 632 (1862).

L. translucens, Carrière, Rev. Hort. **1872**: 240 (1872). — Zabel, Gartenfl. **38**: 493 (1889). — Mouillefert, Arb. Arbriss. **2**: 901 (1892–98).

Caprifolium quinqueloculare, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Himalayas: Kashmir to Kumaon (Wallich, Thomson, Clarke, Falconer, Edgeworth et al.). Afghanistan (Aitchison). Beluchistan (Lace). China: Hupeh (Henry). — Sometimes cultivated (Arnold Arboretum, etc.).

Of this variable species chiefly two forms can be distinguished; one has larger flowers with slender tube scarcely gibbous, but slightly curved, the other has smaller flowers with shorter, distinctly gibbous tube and the leaves of firmer texture and acute or somewhat acuminate. By Dippel and Koehne the latter form, which was introduced into cultivation as *L. translucens*, is distinguished as *L. diversifolia*, Wall. Probably by mistake Dippel quotes under *L. diversifolia* the illustration in Hooker's Icones, but reproduces it under *L. quinquelocularis*.

By Zabel the following three forms are enumerated besides the type: —

f. DIVERSIFOLIA, (Wallich), Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 460 (1903).

f. TRANSLUCENS, (Carrière), Zabel, l. c.

f. DUMOSA, Zabel, l. c., nom. nud. (See also Zabel, Gartenfl. **38**: 493 under *L. translucens*.)

Sect. 4. Nintooa, DC.

Lonicera § *Nintooae*, De Candolle, Prodr. **4**: 333 (1830). — K. Koch, Dendr. **2**[1]: 16 (1872). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 36; Mél. Biol. **10**: 55 (1877), as section of subgenus Caprifolium. — Dippel, Handb. Laubholzk. **1**: 215 (1889). — Fritsch in Engler & Prantl, Nat. Pflanzenfam. IV. **4**: 168 (1891). — Koehne, D. Dendr. 542 (1893).

Nintooa, Sweet, Hort. Brit. ed. 258 (1830). — Webb, It. Hisp. 42 (1838).

Lonicera § *Eunemium*, Rafinesque, New Fl. N. Am. **3**: 20 (1836).

Caprifolium § *Nintooa*, Spach, Hist. Nat. Vég. **8**: 331 (1839).

Lonicera § *Caprifolium*, Clarke in Hooker, Fl. Brit. Ind. **3**: 11 (1882). See also Maximowicz under *L.* § Nintooae.

A group of 28 species distributed from Japan, Korea and China west to the Himalayas and south to the Malayan Archipelago; by one species it is also represented in southwestern Europe and in northern Africa. It forms a transition to the subgenus Periclymenum by its habit and the shape of its corolla, but its closest relation is certainly with the subgenus Chamaecerasus where it is placed by De Candolle and Koehne, while Spach, Maximowicz and Clarke refer it to Periclymenum. By Dippel and Fritsch it is considered a separate subgenus. Twining shrubs, rarely creeping; the branches with evanescent, rarely persistent pith; leaves deciduous or evergreen; flowers in axillary pairs, often crowded toward the end of the branches and forming terminal panicles; bracts subulate, rarely leafy; bractlets and ovaries distinct, except in *L. calcarata;* ovaries 3-, rarely 4- or 5–celled; corolla two-lipped, 1.5–16 cm. long, with long and slender or shorter and sometimes slightly ventricose tube, only in

L. calcarata the tube is much shorter than the limb and has a long spur at the base; style glabrous or pubescent; fruit black, rarely white or yellow.

A. Corolla with a long spur at the base, tube shorter than limb; ovaries connate; bractlets in connate pairs; bracts leaf-like, ovate; ovary 5-celled; fruit yellow. 18. Subsect. Calcaratae.

AA. Corolla without spur; ovaries and bractlets distinct; ovaries 3-celled, only occasionally 4–5-celled.

B. Corolla scarcely exceeding 3 cm. in length, red, orange or yellowish-white; tube about as long as limb or slightly longer, sometimes ventricose below the middle; style hairy; bracts subulate; fruit black. 19. Subsect. Breviflorae.

BB. Corolla 4–16 cm. long (only in *L. ferruginea* 2.5 cm. long), white or yellowish-white, changing to bright yellow; tube slender, not ventricose, longer than limb; style glabrous or short-pubescent (pilose only in *L. dasystyla*); fruit black, rarely white. 20. Subsect. Longiflorae.

Subsect. 18. **Calcaratae**, subsect. nov.

Here belongs only one species from China, distinguished from all other Loniceras by the long-spurred corolla and the 5-celled ovary; from the other species of the section Nintooa also by the connate ovaries and bractlets. A high climbing glabrous shrub with ovate to elliptic-lanceolate, acuminate leaves 6–14 cm. long; flowers in axillary pairs; corolla yellowish-red, about 3 cm. long, the spur 1.5 cm. long; style and filaments pilose at the base.

103. L. calcarata, Hemsley in Hooker, Ic. Pl. **27**. *pl. 2632* (1900).

China: Szechuen (Henry, no. 8937!); Yunnan (Henry, nos. 10721! 10721A!).

Subsect. 19. **Breviflorae**, subsect. nov.

A group of 11 species distributed from central Asia and the Himalayas south to the Malayan Archipelago. The species are twining or rarely creeping shrubs, usually with

pilose or setose pubescence or sometimes quite glabrous; leaves usually coriaceous, and persistent; flowers axillary, peduncled, mostly crowded toward the end of the branches or lateral branchlets, forming terminal panicles, spikes or heads; bracts subulate, rarely linear-lanceolate; bractlets small, not exceeding half of the ovary, distinct; calyx with ovate to lanceolate teeth; corolla two-lipped, not exceeding 3 cm. in length, red, yellow or sometimes whitish; tube usually slightly ventricose and curved, about as long as or somewhat longer than the limb; style pilose; fruit black, crowned by the persistent calyx.

A. Leaves glabrous or pubescent only beneath, often ciliate; bracts subulate, shorter than or as long as ovaries; corolla glabrous without, rarely sparingly pilose.

B. Leaves oval to oval-oblong, rounded at both ends, mucronulate, rarely acutish, thickish, ciliate; low, creeping shrubs.

C. Bracts obtusish, very short; leaves oval-oblong, 3–5 cm. long; branchlets rather stout.

104. *L. rhododendroides*, Graebn.

CC. Bracts subulate, acute; leaves oval, 1.5-2.5 cm. long; corolla red, about 1.5 cm. long, tube slightly curved, longer than limb. 105. *L. crassifolia*, Batal.

BB. Leaves ovate to lanceolate; twining shrubs.

C. Leaves more or less ciliate, ovate-lanceolate to lanceolate, acuminate; flowers 1.5–2 cm. long, red.

D. Leaves narrowed or rounded at the base, but slightly ciliate, otherwise glabrous, 3–6 cm. long; tube longer than limb. 106. *L. alseuosmoides*, Graebn.

DD. Leaves subcordate or rounded at the base, ciliate, usually pubescent on the midrib, rarely on the whole under side, 4–9 cm. long; tube about as long as limb; filaments pilose at the base. 107. *L. Henryi*, Hemsl.

CC. Leaves glabrous or pubescent only beneath, not ciliate, ovate to oblong-ovate or elliptic.

D. Leaves rounded or subcordate at the base, only occasionally somewhat narrowed, ovate to oblong-ovate.

E. Leaves acute or acuminate; corolla 2.5–3 cm. long.

F. Leaves rounded or somewhat narrowed at the base, ovate-oblong to oblong-lanceolate, long acuminate, 8–14 cm. long; bracts slightly longer than ovaries; flowers in long terminal spikes, red. 108. *L. fuchsioides*, Hemsl.

FF. Leaves usually subcordate at the base, ovate to ovate-oblong, 6–8 cm. long, glabrous or somewhat villous beneath; flowers in short, often panicled spikes. 109. *L. glabrata*, Wall.

EE. Leaves obtuse, ovate, rounded or subcordate at the base, 4–7 cm. long, membranous; corolla 1.5 cm. long, white, fading to yellow, tube longer than limb. 110. *L. ovata*, Hamilt.

DD. Leaves narrowed at the base, elliptic to oblong-elliptic, acuminate, 4–8 cm. long; corolla about 3 cm. long, with slender tube. 111. *L. Sumatrana*, Miqu.

AA. Leaves pilose on both sides; bractlets longer than ovaries, subulate to linear-lanceolate; corolla pilose without, rarely glabrous, about 2 cm. long, red or yellow; flowers mostly in short and dense terminal panicles.

B. Leaves with rounded abruptly contracted base, oval to elliptic, abruptly short-acuminate, appressed-pilose on both sides, coriaceous, reticulate; bracts linear; corolla sometimes glabrous without. 112. *L. Loureiri*, DC.

BB. Leaves cordate or subcordate at the base, long acuminate.

C. Corolla with reflexed setose hairs without, limb longer than tube; bracts linear-lanceolate to subulate; leaves oblong-ovate to oblong-lanceolate, 6–10 cm. long, with scattered appressed hairs on both sides. 113. *L. acuminata*, Wall.

CC. Corolla densely clothed with spreading hairs without, tube longer than limb; bracts subulate; leaves oblong-lanceolate to lanceolate, 3–6 cm. long, like the whole plant densely clothed with spreading yellowish hairs. 114. *L. Giraldii*, Rehd.

104. L. RHODODENDROIDES, Graebner, Bot. Jahrb. **29** : 595 (1901).

China: Szechuen (v. Rosthorn, nos. 682! 1066!).

105. L. CRASSIFOLIA, Batalin, Act. Hort. Petrop. **12** : 172 (1892). — Wolf, Gartenfl. **42** : 332 (1893).

China: Szechuen (Henry, nos. 5896! 8927! Pratt, no. 318).

106. L. ALSEUOSMOIDES, Graebner, Bot. Jahrb. **29** : 594 (1901).

China: Szechuen (v. Rosthorn, no. 1902!).

Very closely related to the following species and perhaps not specifically distinct.

107. L. HENRYI, Hemsley, Jour. Linn. Soc. **23**: 363 (1888).

Caprifolium Henryi, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Hupeh (Henry! E. H. Wilson, nos. 1034, 2738); Szechuen (Farges); Yunnan (Delavay, nos. 2366, 2467, 4608). Tibet (Soulié).

The specimen from Szechuen has the leaves almost glabrous, but the petioles pubescent.

108. L. FUCHSIOIDES, Hemsley, Jour. Linn. Soc. **23**: 362. *pl. 9.* (1888).

Caprifolium fuchsioides, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Szechuen (Faber!).

109. L. GLABRATA, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**: 175 (1824); Cat. no. 474 (1828). — Sprengel, Syst. Veg. **4**²: 83 (1827). — De Candolle, Prodr. **4**: 334 (1830). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 172 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 10 (1882).

Caprifolium glabratum, Kuntze, Rev. Gen. Pl. **1**: 273 (1891).

Himalayas: Nepal to Botan (Hooker, Anderson, Clarke). — Rarely cultivated (Kew, ex Hand-l. Arb. Kew).

var. **velutina**, Griffith, in herb.

L. glabrata β, Hooker f. & Thomson, Jour. Linn. Soc. **2**: 172 (1858).

Botan (Griffith, nos. 3410! 3417! 2096!).
Differs by the leaves being villous beneath.

110. L. OVATA, Hamilton in Wallich, Cat. no. 6300 (1828), nom. nud. — Clarke in Hooker, Fl. Brit. Ind. **3**: 11 (1882).

Caprifolium ovatum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

East India: Assam (Hamilton! Masters); Burma (ex Clarke).

111. L. SUMATRANA, Miquel, Fl. Ind. Bat. Suppl. 537 (1860); Sumatra Pflanzenw. 537 (1862).

Caprifolium Sumatranum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Sumatra (ex Miquel).

112. L. LOUREIRI, De Candolle, Prodr. **4**: 334 (1830). — Hasskarl, Flora **28**: 241 (1845). — Hooker, Ic. Pl. **9**. *pl. 806* (1852). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 95 (1858).

Caprifolium Loureiri, Blume, Bijdr. Fl. Ned. Ind. 653 (1825).
L. oxylepis, Miquel, Fl. Ind. Bat. **2**: 125 (1856).
L. Leschenaultii, Miquel, *l. c.* 126, not Wallich.
Caprifolium acuminatum Loureiroi, Kuntze, Rev. Gen. Pl. **1**: 273 (1891).
Caprifolium acuminatum oxylepis, Kuntze, *l. c.*

Java (Blume! Waitz, Jagor, Zollinger, Lobb, Wichura). Ceylon (ex Miquel), but Trimen* states that no *Lonicera* occurs in that island.

var. MAJOR, Hooker, Ic. Pl. **9**: 806 (1852).

Leaves larger, almost glabrous; flowers larger.

var. OBLONGA, Hasskarl, Flora **28**: 242 (1845).

Leaves oblong to oval-oblong; corolla yellow, limb as long as tube.

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* Handb. Fl. Ceylon **2**: 289 (1894).

Kuntze, *l. c.*, calls the form with pilose tube var. *Loureiroi*, and that with glabrous tube var. *oxylepis*.

113. L. ACUMINATA, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**:272 (1824); Cat. no. 472 (1828). — De Candolle, Prodr. **4**:334 (1830). — Clarke, in Hooker, Fl. Brit. Ind. **3**: 10 (1882).

***L. Loureiri*, Hooker, f. & Thomson, Jour. Linn. Soc. 2**: 172 (1858), not De Candolle.

Xylosteum Loureiri*, Blume, ex Hooker f. & Thomson, *l. c.

***Caprifolium acuminatum normale*, Kuntze, Rev. Gen. Pl. 1**: 273 (1891).

Himalayas: Nepal to Sikkim (Hooker, Treutler). — Rarely cultivated (Kew).

114. **L. Giraldii**, spec. nov.

Twining shrub with slender branches, densely covered when young with yellowish spreading hairs as are the petioles and peduncles. Leaves short-petioled, oblong-lanceolate to lanceolate, acuminate, cordate at the base, 3.5–5.5 cm. long, densely yellowish hirsute on both sides, the hairs appressed above, spreading beneath. Flowers in terminal, short and dense panicles; peduncles short; bracts subulate, pilose, exceeding the ovaries about one-half; bractlets ovate, about one-third to one-half as long as the ovaries, ciliate and appressed pilose; ovaries glabrous; calyx teeth ovate-lanceolate, pilose, about one-half as long as the ovaries; corolla two-lipped, 2 cm. long, densely yellowish pilose without, tube slightly ventricose below the middle, somewhat longer than limb, hairy within; upper lip divided about one-third into 4 ovate lobes; the two longer stamens about as long as limb, the other slightly shorter, filaments sparingly pilose below the middle; style slightly longer than the corolla, pilose the whole length; fruit unknown, probably black. — *Plate 3. f. 14–17.*

China: Shensi (Giraldi, no. 117 in herb. Berlin); Szechuen (Farges, in herb. Paris).

Subsect. 20. **Longiflorae**, subsect. nov.

A group of 17 species distributed from Korea and Japan south to the Malayan Archipelago and west to the Himalayas; one species in southwestern Europe and northern Africa. They are all twining shrubs with persistent, rarely deciduous leaves and hollow or in some species solid branches; flowers in axillary pairs, usually crowded toward the end of the branches and forming spikes or panicles; bracts subulate, foliaceous only in *L. Japonica;* bractlets separate, usually one-third to one-half as high as the ovaries; calyx distinctly toothed; corolla two-lipped with slender tube, 4–16 cm. long, only in *L. ferruginea* but 2.5 cm. long; style glabrous or short-pubescent, pilose only in *L. dasystyla;* fruit black or rarely white, crowned by the persistent calyx. The species nos. 115–118 and 119–125 and 129–131 form groups of closer relationship, while the species 126–128 are not closely related to each other or to any of the other species.

A. Style glabrous (or pilose in *L. dasystyla*); plants more or less pubescent, rarely glabrous.

B. Branches and leaves hirsute by long spreading hairs, rarely the leaves only whitish-tomentulose beneath; leaves usually cordate or subcordate, 5–10 cm. long.

C. Corolla about 2.5 cm. long, densely pilose, limb slightly shorter than tube; ovaries usually pilose; branches, petioles and peduncles densely ferrugineously hirsute; leaves ovate to ovate-oblong, acuminate, ferrugineously pubescent beneath. 115. *L. ferruginea*, Rehd.

CC. Corolla 5–6 cm. long, limb much shorter than tube; leaves oblong to ovate-lanceolate, acuminate, rarely obtuse and mucronulate.

D. Flowers in dense terminal racemes or panicles, usually short peduncled; calyx about one-half as long as ovaries; corolla hairy and glandular without; leaves pilose or nearly glabrous above, pilose especially along the veins beneath and often grayish tomentulose; whole plant more or less hirsute with yellowish hairs. 116. *L. macrantha*, Spreng.

DD. Flowers in rather loose terminal panicles, the lower pairs on slender peduncles; calyx teeth about one-third to one-fourth as long as ovaries; leaves glabrous above, white-tomentose beneath.

E. Corolla hairy and glandular without; leaves ciliate and with scattered long pale hairs beneath; lower peduncles to 4 cm. long, like the branches hirsute with long pale hairs. 117. *L. similis*, Hemsl.

EE. Corolla glabrous without and usually the whole plant glabrous, but sometimes the leaves slightly ciliate and branchlets sparingly pilose.

118. *L. Delavayi*, Franch.

BB. Branches and leaves short-pubescent or glabrous; leaves generally rounded or truncate at the base, rarely subcordate.

C. Limb of corolla as long or half as long as the tube.

D. Ovaries pubescent; corolla 4–5 cm. long.

E. Leaves abruptly acuminate, ovate to oblong-ovate, truncate to subcordate at the base, 5–8 cm. long, glabrous above, pubescent beneath.

119. *L. Leschenaultii*, Wall.

EE. Leaves acute or obtusish, oblong-ovate, truncate at the base, 3–6 cm. long, pubescent beneath and often sparingly so above.

120. *L. confusa*, DC.

DD. Ovaries glabrous.

E. Corolla 4–6 cm. long; leaves rounded to subcordate at the base.

F. Bracts subulate.

G. Style glabrous.

H. Leaves acute or obtusish, tomentose beneath; flowers usually in terminal panicles or racemes.

I. Leaves acute, ovate to oblong-ovate, pubescent above when young, 3-5 cm. long; petioles 5 mm. long; calyx teeth triangular-ovate, short.

121. *L. biflora*, Desf.

II. Leaves obtusish, oblong-ovate, glabrous above, 4–7 cm. long, strongly reticulate beneath; petioles 1–1.5 cm. long; calyx teeth ovate-lanceolate, about two-thirds as long as ovaries.

122. *L. reticulata*, Champ.

HH. Leaves acuminate, glabrous above; flowers mostly in solitary pairs.

I. Calyx teeth lanceolate, about as long as ovaries, like the ovate bractlets and the bracts pubescent and glandular; corolla hairy and glandular without; leaves ovate to oblong-ovate, 4–8 cm. long, usually rounded at the base, grayish tomentose beneath.

123. *L. Javanica*, DC.

II. Calyx teeth ovate, about one-third as long as the ovaries, rarely longer; bractlets orbicular, glabrous or ciliate; corolla often glabrous without; leaves broadly ovate to oblong-ovate, 5–9 cm. long, rounded or subcordate at the base, pubescent and glandular beneath or quite glabrous.

124. *L. affinis*, Hook. & Arn.

GG. Style pilose; corolla pubescent and glandular without, the limb slightly longer than the tube; calyx teeth short; bracts about one-half as long as ovaries; leaves ovate to oblong-ovate, 3–5 cm. long, acute, glabrous above, pubescent or glabrous beneath. 125. *L. dasystyla*, Rehd.

FF. Bracts foliaceous, usually ovate; bractlets sometimes as long as ovaries; corolla 3–5 cm. long, hairy and glandular without and often tinged red; leaves ovate to oblong-ovate, 4–8 cm. long, acute or obtusish, pubescent or almost glabrous. 126. *L. Japonica*, Thunb.

EE. Corolla 7–8 cm. long, glabrous or sometimes sparingly hairy and glandular without; leaves abruptly narrowed at both ends, elliptic-oblong, 5–8 cm. long, quite glabrous as the branchlets; fruit white. 127. *L. longiflora*, DC.

CC. Limb of corolla about one-fourth as long as tube; corolla slightly hairy and glandular or glabrous without, 4–5 cm. long; style sometimes with few scattered hairs toward the apex; leaves broadly ovate to oblong-ovate, 2.5–6 cm. long, obtusish to acute, subcordate to truncate at the base, glabrous; branchlets and petioles finely pubescent.

128. *L. Bournei*, Hemsl.

AA. Style with short appressed pubescence; corolla and the whole plant quite glabrous; leaves narrowed at the base.

B. Leaves abruptly contracted at the base and shortly acuminate.

C. Corolla 5–7 cm. long; leaves ovate to ovate-oblong, 5–8 cm. long. 129. *L. leiantha*, Kurz.

CC. Corolla 10–16 cm. long; calyx teeth one-fourth as long as ovaries; leaves ovate to elliptic-ovate, 7–10 cm. long. 130. *L. Hildebrandiana*, Coll. & Hemsl.

BB. Leaves gradually narrowed, oblong-lanceolate, 8–10 cm. long, thickish; calyx teeth ovate-lanceolate, at least one-third as long as ovary; corolla 7–9 cm. long. 131. *L. Braceana*, Hemsl.

115. L. FERRUGINEA, Rehder in Sargent, Trees & Shrubs **1**: 43. *pl. 22* (1902).

China: Yunnan (Henry, nos. 11921! 11921A! 11921B!)

var. **bullata**, var. nov.

L. macrantha bullata, Watt in herb. Kew.

Differs in the glabrous ovaries and the less pubescent thicker leaves prominently reticulate beneath.

India: Manipur (Watt, no. 6739!).

116. L. MACRANTHA, Sprengel, Syst. Veg. **4**^{2}: 82 (1827).— De Candolle, Prodr. **4**: 333 (1830). — Bentham, Fl. Hongkong 143 (1861). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 36; Mél. Biol. **10**: 58 (1877).— Clarke in Hooker, Fl. Brit. Ind. **3**: 10 (1882).— Forbes & Hemsley, Jour. Linn. Soc. **23**: 365 (1888).— Henry, Trans. As. Soc. Jap. Suppl. **24**: 49 (1901).

L. Japonica, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**: 174 (1824), not Thunberg; Cat. no. 473 (1828). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 171 (1858).

Caprifolium Japonicum, D. Don, Prodr. Fl. Nepal. 140 (1825).

Caprifolium macranthum, D. Don, *l. c.* — Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Xylosteum scandens, Hamilton mscr., ex D. Don, *l. c.*

L. longifolia, Royle, Ill. Bot. Him. 236 (1839), nom. nud.

L. hirtiflora, Champion, Hooker's Jour. Bot. Kew Misc. **4**: 166 (1852). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 96 (1858).

Himalayas: Nepal to Botan (Wallich, Hooker, Griffith, Clarke). China: Hongkong (Champion, Wright, Fortune, Hance). Formosa (Oldham, ex Henry).

117. L. SIMILIS, Hemsley, Jour. Linn. Soc. **23**: 366 (1888).

L. macrantha biflora, Collett & Hemsley, Jour. Linn. Soc. **28**: 63 (1891).
Caprifolium simile, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Hupeh (Henry, nos. 1359! 3510, 4155, 5543); Szechuen (Farges, A. v. Rosthorn). India: Burma (Collett, Burke).

118. L. DELAVAYI, Franchet, Jour. de Bot. **10**: 310 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 208 (1900).

China: Yunnan (Delavay, nos. 442! 1014, 4374! 4419! Ducloux, no. 738, Henry, no. 10797, v. Rosthorn, no. 375, 1900); Szechuen (Farges, no. 834!).

This species is distinguished from the preceding only by its glabrousness and has no relation to *L. longiflora* as suggested by Franchet.

119. L. LESCHENAULTII, Wallich in Roxburgh, Fl. Ind. ed. 2. **2**: 178 (1824); Cat. no. 471 (1828). — Sprengel, Syst. Veg. **4**^{2}: 83 (1827). — De Candolle, Prodr. **4**: 334 (1830). — Wight, Ill. Ind. Bot. **2**: 71. *pl. 121. f. B, 2* (1850). — Wight & Arnott, Prodr. Fl. Ind. Or. **1**: 389 (1854). — Hooker f. & Thomson, Jour. Linn. Soc. **2**: 173 (1858). — Clarke in Hooker, Fl. Brit. Ind. **3**: 10 (1882).

L. mollis, Wallich, Cat. no. 6301 (1828), nom. nud. — Wight, Ill. Bot. Him. **2**: 72. *pl. 120, 121. fig. B, 1* (1850).
Caprifolium Leschenaultii, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

East India: Dekkan (Wight, Thomson, Hohenacker).

The form with the leaves villous beneath may be distinguished as var. **mollis** (Wall.), var. nov.

120. L. CONFUSA, De Candolle, Prodr. **4**: 333 (1830). — Loudon, Arb. Frut. Brit. **2**: 1050. *f.* *808* (1838). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 36; Mél. Biol. **10**: 57 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 361 (1888). — Dippel, Handb. Laubholzk. **1**: 218. *f.* *138* (1889). — Koehne, D. Dendr. 552 (1893).

L. Periclymenum, Loureiro, Fl. Cochinch. **1**: 150 (1790).
L. Japonica, Andrews, Bot. Rep. **9**. *pl. 583* (1809), not Thunberg. — Ker, Bot. Reg. **1**. *pl. 70* (1815). — Loiseleur-Deslongchamps, Herb. de l'Amat. **2**. *pl. 132* (1817). — Drapiez, Herb. de l'Amat. **7**. pl. 512 (1834). — K. Koch, Dendr. **2**[1]: 16 (1872).
L. Finlaysoniana, Wallich, Cat. no. 6302 (1828), nom. nud.
Nintooa confusa, Sweet, Hort. Brit. ed. **2**: 258 (1830).
Caprifolium confusum, Spach, Hist. Nat. Vég. **8**: 332 (1839).
L. Telfairii, Hooker & Arnott, Capt. Beechey's Voy. 191 (1841).
L. multiflora, Champion, Hooker's Jour. Bot. Kew. Misc. **4**: 167 (1852). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 96 (1858). — Bentham, Flor. Hongkong. 144 (1861).

China: Kwangtung (Hance, Millett); Hainan (Swinhoe, Henry, no. 8134). Borneo (Burbidge). Java (Hillebrand, cultivated?). — Rarely cultivated (Goettingen, Darmstadt).

This species has often been confounded with *L. Japonica*, though it is very easily distinguished from that species by the subulate bractlets, but it is closely related to *L. biflora* and *L. Leschenaultii*.

121. L. BIFLORA, Desfontaines, Fl. Atl. **1**: 184. *pl. 52* (1798). — Loiseleurs-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**: 56 (1801). — Battandier & Trabut, Fl. Alg. 387 (1890).

L. canescens, Schousboe, Jagt. Vext. Marokko 88 (1800). — Persoon, Syn. Pl. **1**: 213 (1805). — De Candolle, Prodr. **4**: 334 (1830). — Bertoloni Fl. Ital. **2**: 562 (1835). — Willkomm & Lange, Prodr. Fl.

Hisp. **2**: 333 (1870). — Arcangeli, Comp. Flor. Ital. 318 (1882). — Dippel, Handb. Laubholzk. **1**: 219. *f. 139* (1889). — Koehne, D. Dendr. 552 (1891).

Nintooa canescens, Webb, It. Hisp. 42 (1838).

Caprifolium biflorum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

South Europe: Spain (Boissier, Bourgeau); Sicily (ex Arcangeli). North Africa: Morocco (Ball); Algeria (Balansa). — Rarely cultivated (Goettingen, Darmstadt).

122. L. RETICULATA, Champion, Hooker's Jour. Bot. Kew Misc. **4**: 167 (1852). — K. Mueller in Walpers, Ann. Syst. Bot. **5**: 95 (1858). — Bentham, Fl. Hongkong. 144 (1861). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 36; Mél. Biol. **10**: 58 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 366 (1888).

Caprifolium reticulatum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Hongkong (Champion!).

123. L. JAVANICA, De Candolle, Prodr. **4**: 333 (1830). — Miquel, Fl. Ind. Bat. **2**: 125 (1856).

Caprifolium Javanicum, Blume, Bijdr. Ned. Ind. 653 (1825).

Java (Blume! Waitz, Hillebrand).

104. L. AFFINIS, Hooker & Arnott, Beechey's Voy. 264 (1841). — Walpers, Rep. Bot. **2**: 449 (1843). — Siebold & Zuccarini, Abh. Bayr. Akad. Wiss. Math. Phys. Cl. 4^3: 170 (1846). — Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865–66); Prol. Fl. Jap. 158 (1866–67). — Franchet & Savatier, Enum. Pl. Jap. **1**: 204 (1875); **2**: 652 (1879). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 37; Mél. Biol. **10**: 58 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23** 359 (1888).

L. Buergeriana, Blume, in herb.! and ex K. Koch, Dendr. 2^1: 18 (1872).

Liukiu Archipelago (Beechey!). Japan: Hondo (Buerger); Kiusiu (Maximowicz); Shikoku (Makino). Cochin-

china (Gaudichaud, no. 196). China: Yunnan (Ducloux, no. 489).

This species is very variable in the shape and pubescence of the leaves; the pubescent form, which seems to occur together with the type through the whole range of the species, may be distinguished as

var. **hypoglauca**, comb. nov.

L. Leschenaultii, Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865–66); Prol. Fl. Jap. 158. (1866–67), not Wallich.
L. hypoglauca, Miquel, *l. c.* — Franchet & Savatier, Enum. Pl. Jap. **1**: 204 (1875); **2**: 387 (1879).
L. affinis pubescens, Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 37; Mél. Biol. **10**: 58 (1877). — Franchet & Savatier, Enum. Pl. Jap. **2**: 652 (1879).
L. mollissima, Blume, in herb., ex Maximowicz, *l. c.*
Caprifolium hypoglaucum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Caprifolium mollissimum, Kuntze, *l. c.*
L. Sieboldiana, Blume, in herb.!

Japan: Kiusiu (Oldham, no. 484, Maximowicz), Shikoku (Watanabe). Formosa (Oldham). China: Yunnan (Henry, nos. 10302, 10313, 11741, 12623, Ducloux, no. 383).

125. **L. dasystyla**, spec. nov.

Twining shrub with grayish branches finely pubescent when young. Leaves ovate to oblong-ovate, 3–5 cm. long and 2–3 cm. broad, acute or obtusish, rounded or subcordate at the base, dark green, glabrous and lustrous above, grayish tomentose beneath or glabrous, ciliate; petioles 6–8 mm. long, puberulous. Flowers in axillary pairs on puberulous peduncles 8–12 mm. long; bracts subulate, about one-half as long as ovaries, pubescent; bractlets suborbicular, about one-third to one-fourth as high as ovaries, pubescent; ovaries glabrous, ovoid, calyx teeth triangular-ovate, ciliolate, about one-third as high as ovaries; corolla two-lipped, 3.5–4.5 cm. long, pubescent

without and within, tube slender, curved, somewhat shorter than limb, upper lip divided into 4 oblong lobes, the outer ones more than one-third as long as the limb; stamens slightly exceeding the corolla, with glabrous filaments and linear-oblong anthers; style slightly longer than stamens, furnished with short spreading hairs except at the upper third; fruit unknown. — *Plate 4. f. 1–3.*

Tonkin: Between Hanoi and Bac-ninh (Balansa, nos. 4671, 3350 in herb. Berlin, Kew and Paris).

L. dasystyla varies, like the preceding species, with the leaves pubescent on the under side (no. 4671) which may be considered as the type, or glabrous (no. 3350). From all other species of this subsection *L. dasystyla* differs in the hairy style; and from *L. affinis*, to which it seems most nearly related, further by the absence of glands on the under side of the acute or obtusish leaves and by the shape of the corolla which has the limb longer than the tube and the upper lip deeply divided into oblong lobes. From the similar *L. Leschenaultii* and *L. confusa* it may be distinguished besides by the hairy style, also by the glabrous ovary and the solitary flower pairs; and from *L. biflora* by the usually subcordate leaves and their glabrous and lustrous upper side.

126. L. JAPONICA, Thunberg, Fl. Jap. 89 (1784). — Persoon, Syn. Pl. **1**: 213 (1805). — G. Don, Gen. Syst. Gard. Bot. **3**: 447. *f. 79* (1834). — Loudon, Arb. Frut. Brit. **2**: 1051. *f. 809, 810* (1838). — Gray in Perry, Exped. **2**: 313 (1856). — Miquel, Ann. Mus. Lugd. Bat. **2**: 269 (1865–66); Prol. Flor. Jap. 157 (1866–67). — Franchet & Savatier, Enum. Pl. Jap. **1**: 203 (1875); **2**: 383 (1879). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 36; Mél. Biol. **10**: 56 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 364 (1888.) — Britton & Brown, Ill. Fl. N. U. S. Can. **3**: 240. (1898), *f. 3462* is not correct.

? *L. Periclymenum*, Loureiro, Fl. Cochinch. 185 (1790).

Caprifolium Japonicum, Dumont de Courset, Bot. Cult. ed. 2. **7**: 209 (1814). — Roemer & Schultes, Syst. Veg. **5**: 263 (1819). — Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Nintooa Japonica, Sweet, Hort. Brit. ed. 2. 258 (1830).

L. Cochinchinensis, G. Don, Gen. Syst. Gard. Bot. **3**: 447 (1834).

L. repens, hort. Bogor. (Zippel), ex Hasskarl, Cat. Hort. Bogor. 116 (1844); ex Miquel, Fl. Bot. Ind. **2**: 127 (1856).

L. acuminata Japonica, Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865–66); Prol. Fl. Jap. 158 (1866–67).

Japan: Hondo (Wichura, Doenitz, Maximowicz, Rein, Sargent); Kiusiu (Naumann, Oldham). Formosa (Oldham). Korea (Wilford). China: Shinking, Kiangsu, Chihili (ex Forbes & Hemsley); Shensi (Giraldi, nos. 109–114); Fokien (Fortune); Hupeh (Faber, Henry, Wilson, no. 244); Szechuen (Faber); Yunnan (Henry, Delavay, no. 1059, Ducloux, no. 425).—Often cultivated (Arnold Arboretum, etc.) and not infrequently escaped from cultivation and naturalized in southeastern North America.

This species is very variable and the most extreme forms appear rather distinct, but no constant characters can be found to keep separate the two species proposed by Thunberg. It seems, therefore, best to follow Maximowicz who unites them under *L. Japonica*. Chiefly from cultivated plants the forms enumerated below have been distinguished of which the var. *Halliana* seems to come nearest to the type of *L. Japonica* except that the flowers are usually white, while the var. *Chinensis* which has red flowers differs from Thunberg's description by the nearly glabrous leaves. Most Japanese specimens I have seen belong, according to the shape of the leaves and the short peduncles, to the var. *flexuosa*, but the leaves are usually pubescent on both sides at least when young, while in the cultivated plants of var. *flexuosa* the leaves are nearly glabrous.

A. Leaves ovate, usually rounded or subcordate at the base, acute or even short acuminate; limb of corolla nearly as long as the tube, upper lip deeply divided into narrowly oblong lobes; bractlets ovate; at least the lower peduncles longer than the petioles.

B. Leaves nearly glabrous, but usually ciliate, often pubescent on the veins beneath and usually more or less tinged purple when young; corolla carmine outside, upper lip divided more than one half; bractlets narrower than ovaries.

var. CHINENSIS, Baker, Ref. Bot. **4**: 224 (1871), in part.

L. flexuosa, Ker, Bot. Reg. **9**. *pl. 712* (1823), not Thunberg. — Loddiges, Bot. Cab. **11**. *pl. 1037* (1825).

L. Chinensis, Watson, Dendr. Brit. **2**. *pl. 117* (1825). — De Candolle, Prodr. **4**: 333 (1830). — Bunge, Mem. Etr. Acad. Sci. St. Petersb. **2**: 107 (1832). — Hasskarl, Flora **28**: 242 (1845). — Hooker, Bot. Mag. **61**. *pl. 3316* (1834). — Miquel, Fl. Ind. Bat. **2**: 127 (1856). — K. Koch, Dendr. 2^1: 17 (1872).

Caprifolium Chinense, Loudon, Hort. Brit. 70 (1830). — Spach, Hist. Nat. Vég. **8**: 331 (1839).

L. longiflora, Carrière, Rev. Hort. **1873**: 248 (1873), not De Candolle.

L. Japonica, Dippel, Handb. Laubholzk. **1**: 215. *f. 137* (1889). — Koehne, D. Dendr. 552 (1893).

BB. Leaves pubescent on both sides when young; corolla white fading to yellow, rarely slightly tinged red, upper lip divided scarcely one-half; bractlets as broad as ovaries.

var. HALLIANA, Nicholson, Hand-l. Arb. Kew **2**: 17 (1896).

L. flexuosa Halliana, Dippel, Handb. Laubholzk. **1**: 217 (1889).

L. Halliana, hort., ex. K. Koch, Dendr. 2^1: 18 (1872).

Caprifolium Hallianum, hort., ex Dippel, *l. c.*

AA. Leaves ovate to oblong-ovate, usually contracted at the base, obtusish or acute, nearly glabrous, not or slightly pubescent on the veins beneath; corolla white or slightly tinged red, with the limb shorter than the tube, upper lip divided into short ovate or oblong-ovate lobes; bractlets suborbicular or nearly quadrangular and truncate, as broad and often as long as the ovary.

var. FLEXUOSA, Nicholson, Hand-l. Arb. Kew **2**: 17 (1896).

L nigra, Thunberg, Fl. Jap. 89 (1784), not Linné.

L. flexuosa, Thunberg, Trans. Linn. Soc. **2**: 330 (1794). — Persoon, Syn. Pl. **1**: 214 (1805). — Loudon, Arb. Frut. Brit. **2**: 1055 (1838). — Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865-66); Prol. Fl. Jap. 158 (1866–67). — K. Koch, Dend. 2^1: 18 (1872). — Dippel, Handb. Laubholzk. **1**: 217 (1889). — Koehne, D. Dendr. 552 (1893).

Xylosteum flexuosum, Dumont de Courset, Bot. Cult. ed. 2. **7**: 208 (1814).

L. brachypoda, De Candolle, Prodr. **4**: 333 (1830). — Siebold & Zuccarini, Abh. Bayr. Akad. Wiss. Math. Phys. Cl. 4^3: 170 (1846).
Caprifolium flexuosum, hort., ex Steudel, Nom. Bot. **2**: 278 (1841).
L. confusa, Miquel, Ann. Mus. Lugd. Bat. **2**: 270 (1865–66); Prol. Fl. Jap. 158 (1866–67), not De Candolle. — Franchet & Savatier, Enum. Pl. Jap. **1**: 263 (1872).
L. diversifolia, Carrière, Rev. Hort. **1866**: 99. (1866).
L. Japonica Chinensis, Baker, Ref. Bot. **4.** *pl. 224.* (1871), in part.
L. brachypoda repens, Lavallé, Arb. Segrez. 140 (1877), nom. nud.
Caprifolium brachypodum, Gordon, Gard. **11**: 88 (1877).
L. brachybotrya, Meehan, Proceed. Acad. Sci. Philad. 1888 : 279 (1889), sphalmate.
Caprifolium Japonicum subverticillare, Kuntze, Rev. Gen. Pl. **1**: 273 (1891).

f. AUEEO-RETICULATA, Nicholson, Hand-l. Arb. Kew **2**: 17 (1896).

L. brachypoda fol. aureo-reticulatis, Lemaire, Ill. Hort. **9.** *pl. 337* (1862).
L. aureo-reticulata, T. Moore, Flor. & Pom. **1862.** *pl. 136* (1863).
L. reticulata, hort., ex K. Koch, Wochenschi. Gaertner. Pflanzenk. **6**: 94 (1863), not Champion.
L. brachypoda aureo-reticulata, Jacob-Makoy, Belg. Hort. **15**: 146 (1865).
L. brachypoda reticulata, Witte, Flora Afbeeld. 13. *pl. 4* (1868). — Morren, Belg. Hort. **21**: 59. *pl. 5* (1871).
L. flexuosa aureo-reticulata, Dippel, Handb. Laubholzk. **1**: 217 (1889).

This form differs by smaller leaves netted with yellow.

127. L. LONGIFLORA, De Candolle, Prodr. **4**: 331, 333 (1830). — G. Don, Syst. Gard. Bot. **3**: 447. *f. 78* (1834). — Loudon, Arb. Frut. Brit. **2**: 1051 (1838). — Maximowicz, Bull. Acad. Sci. St. Pétersb. **24**: 37; Mél. Biol. **10**: 58 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23**: 364 (1888).

Caprifolium longiflorum, "Sabine", Lindley, Bot. Reg. **15.** *pl. 1232* (1829). — Kuntze, Rev. Gen. Pl. **1**: 274 (1891).
Nintooa longiflora, Sweet, Hort. Brit. ed. 2. 258 (1830).

South China (Millett); Hongkong (Champion, Wight, Hance). — Rarely cultivated (ex Lindley).

128. L. BOURNEI, Hemsley, Jour. Linn. Soc. **23**: 360 (1888).

L. obscura, Hemsley, *l. c.* **28 : 63** (1890).
Caprifolium Bournei, Kuntze, Rev. Gen. Pl. **1 : 274** (1891).

Southwest China: Sanchia (Bourne, no. 10570!); Yunnan (Henry, nos. 11573, 11573A). Burma (Collett, King, Boxall).

A very distinct species and easily distinguished from all others of this subsection by the short limb. In the shape of the corolla it much resembles *L. implexa* and the style shows the same peculiarity of being furnished with scattered hairs toward the apex, while in almost all other Loniceras the pubescence is chiefly present about and below the middle of the style. — *Plate 4. f. 4–6.*

129. L. LEIANTHA, Kurz, Jour. As. Soc. Beng. **43**[2] : 188 (1874); For. Fl. Brit. Burma **2 :** 3 (1877). — Forbes & Hemsley, Jour. Linn. Soc. **23 :** 364 (1888).

Caprifolium leianthum, Kuntze, Rev. Gen. Pl. **1 :** 274 (1891).

Burma (ex Kurz). China: Yunnan (Anderson).

As I have had no opportunity to examine flowers of this species, I do not know whether the style is pubescent, but in habit and foliage it resembles much the two following species, if Anderson's specimen belongs to *L. leiantha* at all.

130. L. HILDEBRANDIANA, Collett & Hemsley, Jour. Linn. Soc. **28 :** 64. *pl. 11* (1891). — N. E. Brown, Gard. Chron. III. **24 :** 210. *f. 58* (1898). — Kew Bull. Misc. Inform. **11 :** 317 (1898). — Hooker, Bot. Mag. **125**. *pl. 7677* (1899). — Mottet, Dict. Hort. Jard. **4 :** 785. *pl. 81* (1899).

Burma (Collett!). China: Yunnan (Henry, nos. 11905, 11905a). — Rarely cultivated (Kew).

Dr. Henry's specimens from Yunnan have the flowers 10–12 cm. long, while in the Burma plant they are 15–17 cm. long, but the shape of the leaves and of the calyx teeth

is that of the Burma plant, though the petioles are somewhat slenderer.

131. L. Braceana, Hemsley, Jour. Linn. Soc. **28**: 64 (1891).

Burma (Clarke!). Assam (in herb. Sander).

Subgen. II. Periclymenum, Linn.

Lonicera § *Periclymena*, Linné, Spec. Pl. **1**:173 (1753).—Willdenow, Spec. Pl. **1**^{2}:98 (1797).

Periclymenum, [Haller, Enum. Stirp. Helv. **2**:464 (1742)].—Miller, Gard. Dict. ed. abridg. **3** (1754).—S. F. Gray, Nat. Arr. Brit. Pl. **2**:487 (1821).

Caprifolium, Adanson, Fam. Pl. **2**:157 (1763).—Jussieu, Gen. Pl. 212 (1789).—Moench, Meth. Pl. 501 (1794).—Ventenat, Tabl. Règne Vég. **2**:598 (1799).—Dumont de Courset, Bot. Cult. **2**:576 (1802).—Borkhausen, Handb. Forstbot. **2**: 1674 (1803).—Michaux, Fl. Bor. Am. **1**: 105 (1803).—Roehling, Deutschl. Fl. ed. 2. **2**: 175 (1812).—Pursh, Fl. Am. Sept. **1**:160 (1814).—Nuttall, Gen. N. Am. Pl. **1**:138 (1818).—Roemer & Schultes, Syst. Veg. **5**:260 (1819).—D. Don, Fl. Nepal. 140 (1825).—Sweet, Hort. Brit. ed. 2. 258 (1830).—Loudon, Hort. Brit. 79 (1830).—K. Koch, Hort. Dendr. 293 (1853).—Howell, Fl. N. W. Am. **1**:282 (1900).

—— [Tournefort, Inst. Rei Herb. 1 : 608 (1700)], and his *Periclymenum*.—Medicus, Phil. Bot. **1**: 126 (1789).—Rafinesque, Ann. Gen. Sci. Phys. **6**: 83 (1820).—Spach, Hist. Nat. Vég. **8**: 329 (1839).

Lonicera § *Caprifolium*, De Candolle, Prodr. **4**: 331 (1830).—Poiret, Enc. Méth. Bot. Suppl. **2**: 227 (1811).—K. Koch, Dendr. **2**^{1}: 5 (1872).—Bentham & Hooker, Gen. Pl. **2**: 5 (1873).—Dippel, Handb. Laubholzk. **1**: 102 (1889).—Fritsch in Engler & Prantl, Nat. Planzenfam. IV. **4**: 166 (1891).—Koehne, D. Dendr. 553 (1893).

—— —— *Labiatiflorae & Regulariflorae*, Zabel in

Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 447, 450 (1903).

Lonicera, Torrey, Fl. N. M. Sect. U. S. **1**:242 (1824).—Bartling, Ord. Nat. 214 (1830).—Rafinesque, New Fl. N. Am. **3**:17 (1838).—Webb, It. Hisp. 41 (1838).—Fuss, Flor. Transylv. Exc. 283 (1866).

This subgenus contains about 22 species distributed from the Mediterranean region to North Europe, Afghanistan, Central China and in North America from Canada to Mexico. They are twining or rarely dumose shrubs with hollow branches and deciduous or persistent leaves of which one or several pairs below the inflorescence are often connate into a disk. Flowers at the end of the branches in sessile three-flowered cymes, rarely reduced to one flower, in the axils of bract-like leaves or of leaves connate into a disk, the whorls forming terminal spikes or heads; bracts small; bractlets distinct except in *L. Griffithii*, sometimes wanting; ovaries always separate, 3-celled; calyx often obsolete, never very conspicuous; corolla two-lipped or sometimes with short almost equal lobes, tube long and slender or short and sometimes gibbous; style glabrous or pilose; fruit red and fleshy with yellowish-white smooth seeds.

A. Corolla with short almost equal limb or indistinctly two-lipped and the lower limb slightly spreading, tube more or less ventricose below the middle or somewhat gibbous, hairy within; stamens inserted below the base of the limb; upper pair of leaves always connate. 21. Subsect. Phenianthi.

AA. Corolla deeply two-lipped with the lower lip reflexed or revolute; stamens inserted at the base of the limb.

B. Bractlets distinct.

C. Corolla 1.5–2.5, rarely 3.5 cm. long, yellow or yellowish-white, often tinged purple, tube usually ventricose below the middle or gibbous, pubescent within, about as long or rarely longer than limb; style pilose or sometimes glabrous. 22. Subsect. Cypheolae.

CC. Corolla 4–8 cm. long, rarely shorter, usually white or yellowish-white; tube slender, gradually narrowed toward the base, longer than limb, glabrous within (except in *L. implexa* and *L. tragophylla*); style glabrous (except in *L. implexa*). 23. Subsect. Eucaprifolia.

BB. Bractlets of each whorl connate into a cupula as long as the ovaries; style pilose; all leaves distinct.

24. Subsect. THORACIANTHAE.

Subsect. 21. **Phenianthi**, comb. nov.

Periclymenum, [Tournefort, Inst. Rei Herb. **1**: 608 (1700)]. — Medicus, Phil. Bot. **1**: 126 (1789), not Miller. — Spach, Hist. Nat. Vég. **8**: 344 (1839).

Caprifolium § *Periclymenum*, Roemer & Schultes, Syst. Veg. **5**: 263 (1819).

Periclyma, Rafinesque, Ann. Gen. Sci. Phys. **6**: 83 (1820).

Phenianthus, Rafinesque, *l. c.*

Lonicera § *Kantemon*, Rafinesque, New Fl. N. Am. **3**: 20 (1836).

Lonicera § *Periclymenum*, Dippel, Handb. Laubholzk. **1**: 212 (1899).

Lonicera § *Caprifolium Regulariflorae*, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 450 (1903).

This group contains 5 species, four in North America distributed from the southern Atlantic States to British Columbia and Mexico, and one species native to China. They are twining shrubs with deciduous or persistent foliage; at least the uppermost pair of leaves below the inflorescence connate into a disk; flowers in terminal heads or spikes, sometimes reduced to one whorl; bracts and bractlets small, sometimes half as high as ovaries; corolla 3.5-6 cm. long, yellow to scarlet or purple, tube more or less ventricose or gibbous, three to six times longer than the short almost regular or two-lipped limb; stamens inserted below the base of the limb; style glabrous, but pilose in *L. ciliosa*.

A. Flowers in peduncled spikes or heads; stamens inserted much below the base of the limb; filaments longer than anthers.

B. Bractlets small; calyx almost obsolete; leaves usually oval to oblong, obtusish.

C. Leaves not ciliate, oval to oblong, 3–6 cm. long, usually glabrous, rarely pilose above and finely ciliate; flowers in elongated spikes; corolla 4–5 cm. long, yellow to scarlet, tube slender, slightly ventricose below the middle, 5 to 6 times longer than the upright, nearly equal limb; style glabrous. 132. *L. sempervirens*, Linn.

CC. Leaves ciliate otherwise glabrous, rarely slightly villous beneath; flowers in heads or short, dense spikes.

D. Tube of corolla slender, but ventricose below the middle, 4 to 5 times longer than the indistinctly two-lipped limb; corolla purple outside, about 4 cm. long; style glabrous; leaves slender-petioled, ovate or oval, 2-4.5 cm. long. 133. *L. Arizonica*, Rehd.

DD. Tube of corolla gibbous at the base, 3 to 4 times longer than the two-lipped limb; corolla 3–4 cm. long, orange yellow, sometimes tinged purple outside; style pilose; leaves ovate to elliptic, 5–8 cm. long. 134. *L. ciliosa*, Poir.

BB. Bractlets half as long as ovaries; calyx at least half as long as ovary; tube of corolla gibbous at the base, 5 to 6 times longer than the indistinctly two-lipped upright limb, corolla 4–5 cm. long; leaves ovate to ovate-oblong, usually acute; plant pilose, rarely glabrous. 135. *L. pilosa*, Willd.

AA. Flowers in a sessile whorl; stamens inserted little below the base of the limb; filaments as long as anthers; corolla 3 cm. long, tube about 3 times longer than the indistinctly two-lipped limb; style glabrous; leaves oval to oblong-obovate, obtuse, 6–10 cm. long, glabrous. 136. *L. subaequalis*, Rehd.

132. L. SEMPERVIRENS, Linné, Spec. Pl. **1**: 173 (1753). — Walter, Fl. Carol. 101 (1788). — Aiton, Hort. Kew. **1**: 230 (1799). — Schmidt, Oester. Baumz. **2**: 54. *pl. 104* (1794). — Sims, Bot. Mag. **20**. pl. 781 (1804). — Persoon, Syn. Pl. **1**: 213 (1805). — De Candolle, Prodr. **4**: 332 (1830). — Loudon, Arb. Frut. Brit. **2**: 1049. *f. 806–809* (1838). — Torrey & Gray, Fl. N. Am. **2**: 5 (1841). — Dupuis, Rev. Hort. IV. **5**: 361. *pl. 19* (1856). — K. Koch, Dendr. 2^1: 15 (1872). — Meehan, Nat. Flow. 2^1: 181. *pl. 45* (1880). — Gray, Syn. Fl. N. Am. 1^2: 16 (1884). — Dippel, Handb. Laubholzk. **1**: 213. *f. 135* (1889). — Koehne, D. Dendr. 554 (1893). — Britton & Brown, Ill. Fl. N. S. U. Can. **3**: 239. *f. 3461* (1898).

Periclymenum sempervirens, Miller, Gard. Dict. ed. 8. (1768).
L. Virginiana, Marshall, Arb. Am. 80 (1785).
L. flammea, Salisbury, Prodr. Stirp. Hort. Allerton. 138 (1796).
Caprifolium sempervirens, Moench, Meth. Pl. Suppl. 194 (1802).—Michaux, Fl. Bor. Am. **1**: 105 (1803).
L. coccinea, Persoon, Syn. Pl. **1**: 213 (1805).
L. speciosa, Wenderoth, Ind. Sem. Hort. Marburg (1825), ex Ind. Kew.
Phenianthus sempervirens, "Rafin." Jackson, Ind. Kew **2**: 494 (1895).

North America: southern Atlantic States, west to Texas and Missouri and north to Connecticut and Indiana. (Numerous collectors). — Often cultivated as an ornamental vine (Arnold Arboretum, etc.).

A. Leaves quite glabrous above and along the margin.
B. Leaves generally oval or ovate, usually deciduous.

Typical form.

L. sempervirens a major, Aiton, Hort. Kew. **1**: 230 (1789).
L. sempervirens Virginiana, Castiglioni, Viaggio Stat. Un. Am. Sept. **2**: 285 (1790).
L. sempervirens ovata, Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**: 84 (1801).
Periclymenum sempervirens latifolium, Spach, Hist. Nat. Vég. **8**: 345 (1839).

Here belong the following garden forms: —

f. SUPERBA, Regel, Gartenfl. **2**: 3. *pl. 38* (1853).

L. sempervirens coccinea superba, Dippel, Handb. Laubholzk. **1**: 214 (1889).

f. FLAVA, Regel, *l. c.* — Dippel, *l. c.*

L. flava and *L. flava nova*, hort., ex Dippel, *l. c.*
L. Fraseri, hort., ex Dippel, *l. c.*
L. sempervirens xanthina, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 451 (1903).
Caprifolium flavum and *C. flavum novum*, hort., ex Zabel, *l. c.*

f. SPECIOSA, Carrière, Fl. Serr. **11**: 111. *pl. 1128* (1856).

L. Magnevilleae, hort., ex Carrière, *l. c.*

f. SANGUINEA, Lavallé, Arb. Segrez. 139 (1877), nom. nud.

L. coccinea sanguinea, hort., ex Lavallé, *l. c.*

f. SHEPHERDII, Lavallé, *l. c.*, nom nud.

BB. Leaves elliptic to oblong-lanceolate, often semipersistent; flowers smaller.

f. MINOR, Aiton, Hort. Kew. **1**: 230 (1789). — Sims, Bot. Mag. **42**. *pl. 1753* (1815). — Ker, Bot. Reg. **7**. *pl. 556* (1821). — Loudon, Arb. Frut. Brit. **2**: 1049. *f. 807* (1838). — Dippel, Handb. Laubholzk. **1**: 214 (1889).

? *L. Caroliniana*, Marshall, Arb. Am. 80 (1785).
? *L. sempervirens Caroliniana*, Castiglioni, Viaggio Stat. Un. Am. Sept. **2**: 285 (1790).
L. sempervirens oblonga, Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**: 48 (1801).
L. angustifolia, Rafinesque, New Fl. N. Am. **3**: 19 (1836), not Wallich.
*Kantemon** *angustifolium*, Rafinesque, *l. c.*
Caprifolium oblongifolium, Sweet, Hort. Brit. ed. 2. 259 (1830).
Periclymenum sempervirens angustifolium, Spach, Hist. Nat. Vég. **8**: 346 (1839).

Aiton's two forms, f. *major* and f. *minor*, based on cultivated plants, are hardly distinct enough to be kept separate, most of the wild plants being more or less intermediate between the two; generally f. *major* is the more northern, f. *minor* the more southern form.

AA. Leaves sparingly pilose above and ciliate.

var. **hirsutula**, var. nov.

Stem short-pilose and glandular or glabrous; leaves oval or ovate to oblong-ovate, obtuse, sparingly pilose

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* Rafinesque proposes Kantemon only as a subgenus of *Lonicera* and it is therefore in this paper not enumerated among the synonyms as a generic name; he gives, however, under *L. angustifolia* and *L. ciliosa* alternative combinations with Kantemon.

above, especially near the margin, finely ciliate, puberulous beneath, deciduous, 4–8 cm. long, the uppermost pair connate into an elliptic disk, usually constricted in the middle, the other leaves short-petioled; petioles, bractlets and calyx glandular, or calyx glabrous and ovaries glandular; corolla hairy and glandular without, about 3 cm. long.

North Carolina: Tryon (1897, herb. Biltmore, no. 4159b); Skyuka Mtn., Polk Co. (J. R. Churchill, 1899). Another specimen from Alabama, Sand Mtn., Jackson Co. (herb. Biltmore, 4159m) has the leaves almost glabrous above, but ciliolate and glandular on the margin and the corolla glabrous without; similar in foliage is a specimen, without flowers, from Virginia, banks of Dan River (Small and Heller, no. 224).

133. L. Arizonica, Rehder in Sargent, Trees & Shrubs **1**: 45. *pl. 23* (1902).

Arizona: (Pringle, Palmer, MacDougal); New Mexico (Vasey).—Recently introduced into cultivation (Darmstadt).

This species is allied to *L. ciliosa*, but readily distinguished by the slender corolla tube, the glabrous style and the much smaller, slender-petioled leaves; from *L. pilosa* it differs by the thin, obtuse, glabrous, but ciliate leaves, the more slender corolla tube and shorter bractlets. The petioles of one or several of the upper pairs of leaves are often furnished with stipular appendages as in *L. hispidula*.

134. L. ciliosa, Poiret, Encycl. Méth. Suppl. **5**: 612 (1817).—De Candolle, Prodr. **4**: 333 (1830).—Loudon, Arb. Frut. Brit. **2**: 1050 (1838).—Torrey & Gray, Fl. N. Am. **2**: 5 (1841).—Gray, Syn. Fl. N. Am. **1**^{2}: 16 (1884).—Dippel, Handb. Laubholzk. **1**: 214. *f. 136* (1889).—Koehne, D. Dendr. 554

(1893). — Piper & Beattie, Fl. Palouse Reg. 170 (1901).

Caprifolium ciliosum, Pursh, Fl. Am. Sept. **1**: 160 (1814). — Greene, Flor. Francisc. 347 (1892). — Howell, Fl. N. W. Am. **1**: 283 (1900).
L. ciliata, F. G. Dietrich, Vollst. Lex. Gaertn. Suppl. **4**: 463 (1817?), ex Ind. Kew., not Muhlenberg.
Kantemon ciliosum*, Rafinesque, New Fl. N. Am. **3**: 19 (1836).
L. ciliosa depressa, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 450 (1903).

Western North America: California to British Columbia, east to Montana and Utah (Lewis! Hall, Wood, Sargent, Brandegee, Howell, MacDougal et al.). — Sometimes cultivated (Goettingen, Darmstadt, etc.).

var. OCCIDENTALIS, Nicholson, Dict. Gard. Suppl. 503 (1901).

Caprifolium occidentale, Lindley, Bot. Reg. **17**. *pl. 1457* (1831).
L. occidentalis, Hooker, Fl. Bor.-Am. **1**: 282 (1834). — Loudon, Arb. Frut. Brit. **2**: 1050 (1838). — Schlechtendal, Linnaea **25**: 216 (1852). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 96 (1858).
L. ciliosa volubilis, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 450 (1903).

Differs only by somewhat larger flowers usually glabrous without and of a deeper orange color.

135. L. PILOSA, Willdenow, ex Humboldt, Bonpland, Kunth, Nov. Gen. Pl. Am. **3**: 427 (1818). — De Candolle Prodr. **4**: 333 (1830). — Hemsley, Bot. Biol. Centr. Am. **2**: 5 (1881–82).

Caprifolium pilosum, Humboldt, Bonpland, Kunth, Nov. Gen. Am. **3**: 427. *pl. 298* (1818).

Mexico (Uhde, Schaffner, Ghiesbreght, Pringle, nos. 6310, 9380, Townsend & Barber, E. W. Nelson, no. 6089).

A. Leaves acute, pilose beneath, ovate-oblong; inflorescence glabrous.

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* See foot-note on p. 169.

Typical form.

AA. Leaves obtusish, mucronulate, oval to oval-oblong.

B. Leaves villous beneath, oval to elliptic-ovate; calyx pilose and glandular; corolla usually hairy without, large.

f. **Schaffneri**, forma nov.

Mexico: San Luis Potosi (Schaffner, no. 363, Parry & Palmer, no. 297, Ghiesbreght, no. 699).

BB. Leaves, like the whole plant, quite glabrous, usually oval-oblong.

f. **tubulosa**, forma nov.

L. tubulosa, Bentham, Plant. Hartweg. **1**: 37 (1839).

Mexico (Hartweg, no. 292! Schaffner, no. 733, Coulter).

The specimen of Townsend & Barber, collected in Chihuahua, Colonia Garcia, has the pair of leaves below the disk furnished with stipular appendages as in *L. Arizonica* and *L. hispidula*.

136. **L. subaequalis**, spec. nov.

Twining shrub. Branches, like the whole plant, glabrous except the inflorescence. Leaves elliptic to oblong-obovate, 7–10 cm. long, obtuse, narrowed at the base into a short petiole; the uppermost pair connate into an elliptic disk, 4–6 cm. long, acute at both ends, separated from the pair below by a slender internode 4–6 cm. long. Flowers in a sessile whorl; bractlets one-third to one-fourth as long as ovaries, semi-orbicular, ciliate; ovaries glandular near the apex; calyx about one-fourth as long as ovary, with short rounded lobes, glandular; corolla funnelform 2.5–3 cm. long, tube somewhat curved, pilose and sparingly glandular without and hairy within, about four times longer than limb; lobes of limb almost equal, ovate; stamens inserted somewhat below the limb, filaments glabrous, about as long as the linear-oblong anthers; style exceeding the corolla, glabrous; fruit unknown. — *Plate 4. f. 7–9.*

China: Szechuen (Henry, no. 8936); W. Szechuen and Tibet frontier (Pratt, no. 364); in herb. Kew.

This is a very well marked species with no close affinity to any other. It is the only Old World species of the subsection Phenianthi and from the other species easily distinguished by the funnelform corolla, the high insertion of the short filaments and by the sessile whorl.

Subsect. 22. Cyhpeolae, Raf.

Lonicera § *Cypheola*, Rafinesque, New Fl. N. Am. **2**:20 (1836).

Caprifolium § *Loniceroides*, Spach, Hist. Nat. Vég. **8**:342 (1839).

Lonicera § *Eucaprifolium*, Dippel, Handb. Laubholzk. **1**: 202 (1889), in part, not Spach.

Lonicera § *Americanae*, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 447 (1903).

A group of ten species, all native to North America and distributed from Canada south to North Mexico, except one Chinese. Twining or sometimes bushy shrubs with deciduous or evergreen leaves, the uppermost pairs of the flowering branches usually connate into a disk; whorls of flowers forming spikes, rarely solitary; bractlets minute or half as long as ovaries; calyx small, often obsolete; corolla two-lipped, 1.5–3.5 cm. long, with the tube about as long as or little longer than limb, orange yellow to yellowish-white, sometimes tinged purple, tube gibbous or more or less ventricose, hairy within except in *L. flava;* style glabrous or pubescent.

This group seems to be closer connected with the preceding than with the following group, though *L. flava* in the shape of the corolla and its nearly glabrous inside approaches the Eucaprifolia, but in general habit and its other characters it shows a close affinity to *L. Sullivantii* and other American species.

A. Bracts longer than one-half ovary; corolla about 1.5 cm. long, tube distinctly gibbous, as long as limb.

B. Leaves all distinct, petioled and never stipulate, oblong to oval, obtuse, coriaceous, dark green and glabrous above, grayish tomentose beneath, rarely glabrous, 2–4 cm. long; flowers in often panicled, pubescent spikes, usually only two opposite flowers in a whorl; corolla 12–15 mm. long, pubescent outside, yellow. 137. *L. subspicata*, Hook. & Arn.

BB. At least the uppermost pair of leaves connate into a disk, rarely all distinct.

C. Leaves orbicular-obovate to oval, obtuse, 2–4 cm. long, rounded or broadly cuneate at the base, glabrous, rarely somewhat pubescent, never stipulate, subcoriaceous; spikes glabrous, with numerous remote whorls, often panicled; corolla 12–15 mm. long, glabrous without, yellow. 138. *L. interrupta*, Benth.

CC. Leaves ovate to ovate-oblong, acutish, or obtuse, usually cordate at the base, 2.5–8 cm. long, glabrous or pilose, the middle ones usually with stipular appendages; flowers in mostly short spikes; corolla 15–18 mm. long, usually pink or purplish, pilose without or glabrous. 139. *L. hispidula*, Dougl.

AA. Bractlets shorter than one-half ovary, usually minute; corolla 1.5–3.5 cm. long; the pair of leaves below the inflorescence always connate.

B. Corolla 1.5–2.5 cm. long, rarely longer, hairy within.

C. Disk of connate leaves orbicular to oblong, pointed and acute or mucronate at the ends, rarely obtuse, concave.

D. Leaves glabrous, or pubescent only beneath, not ciliate (except in a var. of *L. albiflora*); corolla glabrous or sparingly pilose without.

E. Tube of corolla slender, slightly ventricose below the middle, usually longer than the limb; inflorescence sessile or nearly so; style and filaments glabrous, rarely pilose.

F. Leaves ovate or oval, 2–3 cm. long, glabrous or pubescent; one or two sessile whorls; corolla yellowish-white, 1.5–3 cm. long, glabrous or pilose without. 140. *L. albiflora*, Torr. & Gray.

FF. Leaves oblong to oblong-lanceolate, 5–8, rarely but 3–4 cm. long, glabrous or nearly so; inflorescence very short-peduncled, consisting of several whorls or rarely but one; corolla yellow, 2–2.5 cm. long, glabrous without. 141. *L. Yunnanensis*, Franch.

EE. Tube of corolla gibbous; corolla often tinged purple; inflorescence short-peduncled.

F. Leaves quite glabrous, usually several pairs connate, oblong, very glaucous beneath, thin, 4–8 cm. long; corolla glabrous without, about 1.5 cm. long, tube as long as limb, filaments and style glabrous, rarely pilose.

142. *L. dioica*, Linn.

FF. Leaves pubescent beneath, oval to oblong, 4-8 cm. long, usually but one pair connate; corolla often pilose without, about 2 cm. long, tube longer than limb; filaments at the base and style pilose, rarely glabrous.

143. *L. glaucescens*, Rydb.

DD. Leaves pubescent on both sides and ciliate, dark green and sometimes glabrous above, oval, 5–8 cm. long; spikes peduncled, with usually several whorls; corolla glandular-pubescent without, orange-yellow, 2–2.5 cm. long, the tube longer than the limb and slightly ventricose below the middle.

144. *L. hirsuta*, Eat.

CC. Disk of connate leaves orbicular, 4–8 cm. long, rounded and usually obtuse or emarginate at the ends, thickish, with glaucous bloom above; leaves oval to obovate-oblong, 5–10 cm. long, usually puberulous beneath; spikes mostly peduncled, often in threes, with 2–4, often remote whorls; corolla glabrous without, pale yellow, 2.5–3 cm. long, tube slightly ventricose, longer than limb; style pilose.

145. *L. Sullivantii*, Gray.

BB. Corolla about 3 cm. long, bright or orange-yellow, tube slender, longer than limb, glabrous without and sparingly hairy near the mouth within; style glabrous; spike peduncled, with 2–3 whorls; leaves oval, 4–8 cm. long, glabrous; disk with rounded often emarginate ends, thin, not glaucous above.

146. *L. flava*, Sims

137. L. SUBSPICATA, Hooker & Arnott, Bot. Beechey's Voy. 349 (1840). — Torrey & Gray, Fl. N. Am. **2**:8 (1841). — Walpers, Rep. Bot. **2**:448 (1843). — Torrey, Bot. Mex. Bound. Surv. 71. *pl. 29* (1859).

Caprifolium subspicatum, K. Koch, Hort. Dendr. 294 (1853). — Greene, Fl. Francisc. 348 (1892).

L. hispidula subspicata, Gray, Proceed. Am. Acad. **8**:628 (1873); Bot. Calif. **1**:280 (1876); Syn. Fl. N. Am. **1²**:18 (1884).

California (Nuttall, Douglas, Rothrock, Orcutt, Sargent

& Engelmann, Greene, Franceschi); Santa Catalina Island (Franceschi).

Usually only one or two flowers of each cyme are developed and thus the whorls become 2–4 flowered, a remarkable feature which occurs but accidentally in other species of this subgenus.

var. denudata, var. nov.

Branchlets glabrous, tinged purple; leaves glabrous or nearly so, oval or obovate to elliptic, 1.5–2 cm. long, obtuse, gradually or abruptly narrowed into a short petiole, coriaceous, dark yellowish-green above, pale beneath; inflorescence including the corolla more or less pubescent.

California: San Diego (Thurber, no. 558, May, 1852, D. Cleveland, 1874, Palmer, no. 120, 1875, Orcutt, June 20, 1884). Lower California, Santo Thomas hills (Orcutt, May 17, 1886).

From the type this form is easily distinguished by the glabrous foliage; and from *L. subspicata* by the leaves being all distinct and by the pubescent inflorescence.

138. L. INTERRUPTA, Bentham, Pl. Hartweg. 313 (1849). — Walpers, Ann. Bot. Syst. **2**: 733 (1851). — Eastwood, Fl. S. Fork of King's Riv. (Publ. Sierra Club, No. 27) 81 (1902). — Rehder in Sargent, Trees & Shrubs **1**: 139. *pl. 70* (1903).

L. hispidula interrupta, Gray, Proceed. Am. Acad. 8: 628 (1873); Bot. Calif. 1: 280 (1875); Syn. Fl. N. Am. 1. 218 (1884).
Caprifolium interruptum, Greene, Fl. Francisc. 347 (1892).

Southwestern North America: California (Torrey, Gray, Bolander, Sargent, Hansen, Greene, et al.). Arizona (Pringle, Lemmon, Jones).

L. interrupta varies with pubescent leaves and occasionally, but very rarely, with all the leaves distinct; certain forms combining these characters have been confounded with the

preceding species, but they are readily separated from *L. subspicata* by the glabrous inflorescence and by the broader leaves which do not present the marked contrast between the dark green glabrous upper side and the whitish tomentose under side which is characteristic of *L. subspicata*, but are pale bluish-green and pubescent on both sides.

139. L. HISPIDULA, "Douglas", Torrey & Gray, Fl. N. Am. **2**:8 (1841).—Gray, Proceed. Am. Acad. **8**:628 (1873); Bot. Calif. **1**:280 (1876); Syn. Fl. N. Am. 1^2:18 (1884).—Dippel, Handb. Laubholzk. **1**:211. *f. 134* (1889).—Koehne, Dendr. 553 (1891).

L. microphylla, Hooker, Fl. Bor.-Am. **1**:283 (1834), not Willdenow. *Caprifolium hispidulum*, Lindley, Bot. Reg. **21**. *pl. 1761* (1836).—Greene, Fl. Francisc. 347 (1892).—Howell, Fl. N. W. Am. **1**:283 (1900).

Western North America.

A very variable species of which the most extreme forms look very distinct, but they are so closely connected by intermediate forms that a specific separation seems hardly advisable.

A. Leaves ovate, 2–3 cm. long, obtusish, chartaceous, pilose on both sides and ciliate, the uppermost connate or sometimes distinct; branchlets hirsute; whorls of flowers few, usually slender-peduncled, inflorescence glabrous or glandular, corolla hairy outside or glabrous.

Typical form.

L. hispidula Douglasii, Gray, Proceed. Am. Acad. 8:628 (1873); Bot. Calif. 1:280 (1876).

British Columbia to northern California (Nuttall, Hall, H. E. Brown, no. 872).—Sometimes cultivated (Goettingen, Muenden).

AA. Leaves ovate-oblong, 3–8 cm. long, usually acutish, somewhat coriaceous, usually glabrous above, often glabrous beneath or more or less pilose or villous; whorls many, in elongated often panicled spikes.

var. **Californica,** comb. nov.

L. ciliosa, Hooker & Arnott, Bot. Capt. Beechey's Voy. 143 (1832), not Poiret.
L. Californica, Torrey & Gray, Fl. N. Am. **2**:7 (1841).
Caprifolium Californicum, K. Koch, Hort. Dendr. 294 (1853). — Howell, Fl. N. W. Am. **1**:283 (1900).
L. pilosa, Kellogg, Proceed. Calif. Acad. **1**:62; [ed. 2. p. 63] (1855), not Willdenow.
L. hispidula vacillans, Gray, Proceed. Am. Acad. **8**:628 (1873); Bot. Calif. **1**:280 (1876); Syn. Fl. N. Am. **1**^{2}:18 (1884).
Caprifolium hispidulum Californicum, Greene, Fl. Francisc. 347 (1892).

British Columbia to California (Hartweg, Gray, Hansen, Brandegee et al.); Santa Catalina Island (B. Trask, 1896, 1897).

This variety varies with the inflorescence from perfectly glabrous to densely glandular-pubescent and with the foliage quite glabrous or pilose on both sides even on the same plant as is shown in G. Hansen's nos. 214 and 215. A rather distinct looking form is that from Santa Catalina Island with the thickish leaves dark green and glabrous above, white and villous beneath and the inflorescence densely glandular-pubescent.

140. L. ALBIFLORA, Torrey & Gray, Fl. N. Am. **2**:6 (1841). — Gray, Jour. Nat. Hist. Boston **6**:213 (1857); Syn. Fl. N. Am. **1**^{2}:18 (1884).

L. anelica, Lindheimer, in herb.! and ex Gray, *l. c.*
Caprifolium albiflorum, K. Koch, Hort. Dendr. 294 (1853).

Southern North America: West Arkansas and Texas to Arizona and Mexico. — Formerly cultivated in the botanic garden at Cambridge, Mass. (ex herb. Gray).

A. Leaves glabrous like the whole plant.

Typical form.

Arkansas (ex Gray); Texas (Lindheimer, Thurber, Heller, Bush).

AA. Leaves pubescent, at least beneath; corolla pilose outside or glabrous.

var. dumosa, var. nov.

L. dumosa, Gray, Pl. Wright. **2**: 66 (1853); Bot. Mex. Bound. Surv. 71 (1859). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 94 (1858). *Caprifolium dumosum*, K. Koch, Hort. Dendr. 294 (1853).

Arizona (Rusby); New Mexico (Wright! Thurber, Greene); Mexico (Palmer, Pringle).

141. L. YUNNANENSIS, Franchet, Jour. de Bot. **10**: 310 (1896). — Bois, Jour. Soc. Hort. France IV. **1**: 211 (1900).

China: Yunnan (Delavay no. 229!).

var. tenuis, var. nov.

Yunnan, Mengtze (Henry, no. 10798).
Smaller in every part; leaves oblong, acutish, about 3 cm. long, sparingly pilose beneath, especially on the veins; one very short-peduncled whorl; corolla 2 cm. long, "white, also yellow" according to Dr. Henry.

142. L. DIOICA, Linné, Syst. Nat. Veg. ed. 12. **2**: 165 (1767). — Aiton, Hort. Kew. **1**: 230 (1789). — Du Roi, Harbk. Baumz. **1**: 553 (1795). — Willdenow, Berl. Baumz. 175 (1796). — Britton & Brown, Ill. Fl. N. U. S. Can. **3**: 238. *f. 3458* (1898).

L. glauca, Hill, Hort. Kew 446. *pl. 18* (1768); Twenty-five N. Pl. **5** *pl. 11* (1773). — Gray, Proceed. Am. Acad. **19**: 77 (1883); Syn. Fl. N. Am. 1^2: 17 (1884). — Dippel, Handb. Laubholzk. **1**: 210. *f. 133* (1889). — Koehne, D. Dendr. 554 (1893). — Tyler, Bull. Torr. Bot. Club **21**: 123. *pl. 182* (1894). — Farwell, Asa Gray Bull. **4**: 52 (1896).
L. media, Murray, Comment. Goett. **7**: 28. *pl. 3* (1776). — Moench, Verz. Weissenst. 57 (1785). — K. Koch, D. Dendr. 2^1: 11 (1872). — Schmidt, Oester. Baumz. **2**: 57. *pl. 109* (1794).
L. parviflora, Lamarck, Enc. Méth. Bot. **1**: 728 (1783). — Poiret, Enc. Méth. Bot. Suppl. **5**: 613 (1817). — Bigelow, Fl. Boston. ed. 2. 87

(1824). — De Candolle, Prodr. **4**: 332 (1830). — Hooker, Fl. Bor.-Am. **1**: 282 (1834). — Loudon, Arb. Frut. Brit. **2**: 1048. *f. 803, 804* (1838). — Torrey & Gray, Fl. N. Am. **2**: 7 (1841). — Torrey, Fl. N. York **1**: 298 (1843).

Caprifolium glaucum, Moench, Meth. Pl. 502 (1794). — Dumont de Courset, Bot. Cult. **2**: 577 (1802).

L. connata, Meerburg, Pl. Sel. Ic. *pl. 11* (1798).

Caprifolium bracteosum, Michaux, Fl. Bor. Am. **1**: 185 (1803).

Caprifolium parviflorum, Pursh, Fl. Am. Sept. **1**: 161 (1814). — Elliott, Sketch Bot. S. Carol. **1**: 271 (1821). — Spach, Hist. Nat. Vég. **8**: 342 (1839).

Caprifolium dioicum, Roemer & Schultes, Syst. Veg. **5**: 260 (1824).

Caprifolium dentatum, Rafinesque, Atlant. Jour. **1**: 151 (1832).

? *L. elliptica*, Rafinesque, New Fl. N. Am. **3**: 18 (1836).

? *L. ovata*, Rafinesque, *l. c.*

? *L. acutifolia*, Rafinesque, *l. c.* 19.

L. dentata, Rafinesque, *l. c.*

Caprifolium reflexum, Kirchner, Arb. Musc. 428 (1864).

L. reflexa, hort., ex Kirchner, *l. c.*

L. macrophylla rubra, Carrière, Rev. Hort. **1870–71**: 340 (1870).

L. macrophylla, "Hook.", Lavallé, Arb. Segrez. 139 (1877).

L. gibbosa "Michaux", ex Lavallé, *l. c.*, not Willdenow.

Northeastern North America: Canada west to the Saskatchewan, south to North Carolina, Ohio and Iowa (Hooker, Thurber, Vasey, Pringle, Sargent et al.). — Sometimes cultivated (Arnold Arboretum, etc.).

143. L. GLAUCESCENS, Rydberg, Bull. Torr. Bot. Club **24**: 90 (1897). — Britton & Brown, Ill. Fl. N. U. S. Can. **3**: 238. *f. 3457* (1898).

Caprifolium parviflorum, Richardson in Franklin, Narr. Jour. Pol. Sea 733 (1823), not Pursh.

L. parviflora β, Hooker, Fl. Bor.-Am. **1**: 282 (1834). — Torrey & Gray, Fl. N. Am. **2**: 7 (1841).

L. parviflora Douglasii, Gray, Man. Bot. N. U. S. 171 (1848), in part.

L. Douglasii, Koehne, D. Dendr. 554 (1893), not De Candolle.

L. hirsuta glaucescens, Rydberg, Contr. U. S. Nat. Herb. **3**: 503 (1896).

Northeastern North America: Canada west to the Saskatchewan, south to Virginia, Ohio and Nebraska (Hooker! Bourgeau, Macoun, Loring, Dudley, Sandberg, Rydberg! Steele et al.). — Rarely cultivated (Arnold Arboretum).

This species varies with densely glandular ovaries: Canada, Toronto (herb. Biltmore, no. 554g); New York (Dudley); Michigan (Dodge). A very remarkable form which may be distinguished as *L. glaucescens* **dasygyna,** var. nov., has the ovaries densely glandular and hirsute: Ohio, Columbus (Sullivant, no. 43), Painesville (Werner); "from Hogg's garden, received from Douglas" (herb. Thurber).

144. L. HIRSUTA, Eaton, Man. Bot. N. Am. ed. 2. 307 (1818). — Bigelow, Fl. Bost. ed. 2. 88 (1824). — Hooker, Bot. Mag. **58**. *pl. 3103* (1831); Fl. Bor.-Am. **1**: 282 (1834). — Torrey & Gray, Fl. N. Am. **2**: 6 (1841). — Torrey, Fl. N. York **1**: 298 (1843). — Gray, Man. Bot. N. U. S. 177 (1844); Syn. Fl. N. Am. 1^2: 17 (1884). — Spae, Ann. Soc. Agr. Bot. Gand. **5**: 291. *pl. 269* (1849). — K. Koch, Dendr. 2^1: 13 (1872). — Dippel, Handb. Laubholzk. **1**: 210. *f. 132* (1889), in part. — Fritsch in Engler & Prantl, Nat. Pflanzenfam. IV. 4: 167. *f. 57A* (1891). — Koehne, D. Dendr. 553 (1893). — Tyler, Bull. Torr. Bot. Club **21**: 123. *pl. 181. f. 1–3* (1894). — Farwell, Asa Gray Bull. **4**: 52 (1896). — Sargent, Gard. & For. **9**: 344. *f. 45* (1896). — Britton & Brown, Ill. Fl. N. U. S. Can. **3**: 238. *f. 3456* (1898).

Caprifolium pubescens, Goldie, Edinb. Phil. Jour. **6**: 323 (1822). — Hooker, Exot. Fl. **1**. *pl. 27* (1823). — Spach, Hist. Nat. Vég. **8**: 342. *pl. 52* (1839).

L. Goldii, Sprengel, Syst. Veg. **1**: 758 (1825).

L. pubescens, Sweet, Hort. Brit. 195 (1827). — De Candolle, Prodr. **4**: 332 (1830). — Loudon, Arb. Frut. Brit. **2**: 1047. *f. 801* (1838).

Caprifolium Douglasii, Lindley, Trans. Hort. Soc. Lond. **7**: 244 (1830).

L. Douglasii, De Candolle, Prodr. **4**: 332 (1830). — Loudon, Arb. Frut. Brit. **2**: 1048 (1838).

Caprifolium hirsutum, "Denson", Loudon, Hort. Brit. Suppl. **3**: 584 (1832). — Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

? *L. Eriensis*, Raflnesque, New Fl. N. Am. **3**: 18 (1836).

L. flava, De Talou, L'Hort. Franç. **1863**: 226. *pl. 20* (1863), not Sims.

L. pilosa, hort., ex Dippel, Handb. Laubholzk. **1**:210 (1889), not Willdenow.
Caprifolium pilosum, hort., ex Dippel, *l. c.*

Northeastern North America: from Canada west to the Saskatchewan, south to Pennsylvania, Ohio, Michigan and Nebraska (Torrey, Porter, Robbins, Dudley, Barlow, Engelmann, F. V. Hayden, Trelease et al.). — Sometimes cultivated (Arnold Arboretum, etc.).

145. L. Sullivantii, Gray, Proceed Am. Acad. **19**:76 (1883); Syn. Fl. N. Am. **1**^{2}:17 (1884); — S. Watson in Gray, Man. Bot. N. U. S. 221 (1890). — Sargent, Gard. & For. **3**:187. *f. 34* (1890). — Koehne, D. Dendr. 554 (1893). — Tyler, Bull. Torr. Bot. Club **21**:123. *pl. 181. f. 4* (1894). — Britton & Brown, Ill. Fl. N. U. S. Can. **3**:239 (1898), *f. 3459* probably represents *L. glaucescens*.

? *L.* or *Caprifolium rupestris*, Rafinesque, New Fl. Am. N. **3**:17 (1836).
? *L. reticulata*, Rafinesque, *l. c.* 18.
L. spec. nov. Sullivant, Cat. Plant. Columbus 29, 57 (1840).
L. flava, β, Torrey & Gray, Fl. N. Am. **2**:6 (1841).
L. parviflora Sullivantii, Wood, Classb. Bot. ed. 2. 298 (1847).
L. flava, Gray, Man. Bot. N. U. S. 171 (1848), in part.
L. flava Sullivantii, Wood, Classb. Bot. ed. 7. 298 (1851).
Caprifolium proliferum, Kirchner, Arb. Musc. 427 (1864).
L. prolifera, hort., in herb. St. Louis! and ex Lavallé, Arb. Segrez. 139 (1877).
Caprifolium Sullivantii, Kuntze, Rev. Gen. Pl. **1**:274 (1891).
L. sempervirens Sullivantii, Mouillefert, Arb. Arbriss. **2**:897 (1892–98).

Central North America: from Ohio to Tennessee, Missouri, Iowa and Wisconsin (Sullivant! Werner, Jones, Vasey, Wilkinson, Engelmann, Broadhead et al.). — Sometimes cultivated (Arnold Arboretum, etc.). Specimens in the herbarium of the Missouri Botanical Garden, one from "Vereinsgarten, Prag, June 1864" and one of the herbarium Bernhardi, probably collected still earlier, show that this species has long been in cultivation in European gardens under the name *L. prolifera*.

146. L. FLAVA, Sims, Bot. Mag. **32**. *pl. 1318* (1810).— Loiseleur-Deslongchamps, Herb. de l'Amat. **3**. *pl. 162* (1819).—Loddiges, Bot. Cab. **4**. *pl. 338* (1819).— Drapiez, Herb. de l'Amat. **3**. *pl. 211* (1829).— De Candolle, Prodr. **4**: 332 (1830).—Loudon, Arb. Frut. Brit. **2**: 1047. *f. 801* (1838).—Torrey & Gray, Fl. N. Am. **2**: 6 (1841).—K. Koch, Dendr. 2^1: 14 (1872).—Gray, Syn. Fl. N. Am. 1^2: 17 (1884).— Dippel, Handb. Laubholzk. **1**: 208. *f. 138* (1889).— Sargent, Gard. & For. **3**: 187. *f. 33* (1890); **4**: 253 (1891).—Koehne, D. Dendr. 554 (1893).—Britton & Brown, Ill. Fl. N. U. S. Can. **3**: 239. *f. 3460* (1898).

Caprifolium flavum, Dumont de Courset, Bot. Cult. ed. 2. **7**: 209 (1814).—Elliott, Sketch Bot. S. Carol. **1**: 271 (1821).
Caprifolium Fraseri, Pursh, Fl. Am. Sept. **1**: 160 (1814).
L. Fraseri, Poiret, Enc. Méth. Bot. Suppl. **5**: 612 (1817).—Pepin, Rev. Hort. II. **5**: 125 (1846).

Eastern North America: from North Carolina and Georgia (Smyth, Harper, Small), west to Missouri (Bush), Arkansas (Engelmann) and Indian Territory (Buttler).—Rarely cultivated (Kew, ex herb.).

This species has been often confounded with the preceding species, from which it may be distinguished by the more slender and longer corolla tube glabrous within except slightly hairy near the mouth, by the glabrous style, the bright yellow or orange-yellow color of the corolla, by the thinner and generally smaller leaves, by the uppermost connate pair not being furnished with a glaucous bloom above and not thickish and by the distinctly peduncled, solitary spike. *L. flava* seems to have at present entirely disappeared from cultivation. The plant which is now usually cultivated in gardens under this name is either *L. Sullivantii* or in other cases an apparent hybrid of *L. flava* with *L. hirsuta* or of similar parentage.

Subsect. 23. Eucaprifolia, Spach.

Caprifolium § *Eucaprifolium*, Spach, Hist. Nat. Vég. **8**: 334 (1839). — Dippel, Handb. Laubholzk. **1**: 202 (1889), in part.

Lonicera § *Europaeae*, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 447 (1903).

This group contains 7 species, one native to China, the others distributed throughout the Mediterranean region and extending to northern Europe and the Caucasus. They are twining shrubs with deciduous or sometimes persistent leaves, the upper pairs of the flowering branches mostly connate; flowers in terminal whorls usually disposed in dense heads or spikes, not in remote whorls unless in the axils of leafy disks; bractlets present, sometimes as long as ovaries, or wanting; calyx small, often obsolete; corolla two-lipped, 3–8 cm. long, white or yellowish-white, often tinged with pink or purple without, rarely yellow; tube slender, two or more times as long as the limb, glabrous within, except in *L. implexa* and *tragophylla*; style glabrous or in *L. implexa* with scattered hairs above the middle.

A. Whorls of flowers all or at least the lower ones in the axils of connate leaves.

B. Tube within and style pilose above the middle; stamens much shorter than limb; tube 3 to 4 times as long as limb; corolla 3–4.5 cm. long, yellowish-white, often suffused with pink; usually 2–5 whorls of flowers, all in the axils of connate leaves; leaves persistent, oval or ovate to narrowly oblong, mostly sessile, 2.5–5 cm. long, glabrous or pubescent.

147. *L. implexa*, Ait.

BB. Tube within and style glabrous, stamens as long as limb; leaves deciduous, the lower ones petioled.

C. Bractlets wanting or minute; usually one or two whorls of flowers, each in the axils of connate leaves; corolla white, often suffused with pink or purple, 4–5 cm. long, glabrous or pilose without; leaves oval to elliptic, 5–10 cm. long, glabrous or nearly so, obtusish. 148. *L. Caprifolium*, Linn.

CC. Bractlets one-third to one-half as high as ovaries; whorls several, the lower one or two in the axils of connate leaves, the upper subtended by small bracts; corolla purple and usually glandular-pubescent outside, 4–5 cm. long; leaves oval to obovate-oblong, glabrous, usually acute, 4–10 cm. long. × *L. Italica*, Tausch.

AA. Whorls of flowers in the axils of distinct, bract-like leaves, forming terminal sometimes sessile dense heads or spikes; bractlets present.

B. Upper pairs of leaves connate or occasionally distinct and sessile.

C. Bractlets one-fourth or one-third as long as ovaries.

D. Inflorescence glabrous, short-peduncled, with 1–2 whorls.

E. Corolla 5–6 cm. long, tube twice as long as limb, glabrous within; bractlets one-half as long as ovaries; leaves obovate to oblong-obovate, obtuse, 4–6 cm. long, glabrous. 149. *L. Stabiana*, Pasqu.

EE. Corolla 7–8 cm. long, tube nearly thrice as long as limb, sparingly hairy within; bractlets one-third as long as ovaries; leaves oval to oblong, obtuse or acutish, 6–14 cm. long, pubescent beneath, at least along the veins. 150. *L. tragophylla*, Hemsl.

DD. Inflorescence glandular, sessile, with usually 3–5 whorls; bractlets one-third to one-fourth as long as ovaries; corolla yellowish-white, purple outside, glandular, 4–5 cm. long; leaves oval to oblong, the upper pairs connate, the lower ones sessile, 2–4 cm. long, glaucous, glabrous, or rarely pilose. 151. *L. splendida*, Boiss.

CC. Bractlets about as long as ovaries; heads of flowers usually long-peduncled, often in threes, glabrous or glandular; corolla 4–5 cm. long, yellowish-white and often purple without; leaves obovate or oval to elliptic, usually obtuse, 3–8 cm. long, glabrous or pubescent and sometimes glandular. 152. *L. Etrusca*, Santi.

BB. Leaves all distinct, petioled, oval or ovate to oblong, 4–6 cm. long, glabrous or pubescent; heads peduncled, with several whorls; bractlets nearly as long as ovaries, glandular; corolla 4–5 cm. long, yellowish-white, glandular without and often purple. 153. *L. Periclymenum*, Linn.

147. L. IMPLEXA, Aiton, Hort. Kew. **1**: 131 (1789). — Sims, Bot. Mag. **17**. *pl. 640* (1803). — De Candolle, Prodr. **4**: 331 (1830). — Bertoloni, Fl. Ital. **2**: 559 (1835). — Loudon, Arb. Frut. Brit. **2**: 1046. *f. 800* (1838). — Gussone, Syn. Fl. Sicul. **1**: 259 (1842). —

Grenier & Godron, Fl. France **2**: 9 (1850). — Reichenbach, Ic. Fl. Germ. **17**: 85. *pl. 1173. f. 4* (1855).— Pokorny, Oester. Holzpfl. 156. *pl. 29. f. 495–498* (1864).— Willkomm & Lange, Prodr. Fl. Hisp. **2**: 331 (1870). — K. Koch, Dendr. **2**[1]: 10 (1872).— Boissier, Fl. Or. **3**: 5 (1875). — Arcangeli, Comp. Fl. Ital. 318 (1882). — Dippel, Handb. Laubholzk. **1**: 206. *f. 130* (1889). — Battandier & Trabut, Fl. Alg. 307 (1890). — Laguna, Fl. For. Esp. **2**: 46. *pl. 75. f. 2* (1890). — Koehne, D. Dendr. 555 (1893). — Bubani, Fl. Pyren. **2**: 334 (1900). — Halacsy, Consp. Fl. Graec. **1**: 699 (1901).

L. glauca, Meerburg, Pl. Sel. Ic. *pl. 12* (1798), not Hill.

L. Caprifolium, Ucria, Hort. Panhorm. 94 (1789), not Linné. — Rafinesque, Pl. exsicc., ex Strobl, Oester. Bot. Zeitschr. **33**: 59 (1883). — Cosentini, Cat., ex Strobl., *l. c.*

Caprifolium implexum, Dumont de Courset, Bot. Cult. ed. 2. **7**: 209 (1814). — Roemer & Schultes, Syst. Veg. **5**: 261 (1819).

L. Dioscoridis, Roubier, ex Nyman, Consp. Fl. Eur. 321 (1878–82).

Mediterranean region: South Europe from Spain through southern France and Italy to Greece (Boissier, Bourgeau, Heldreich, Orphanides, Schultz et al.); North Africa, Algeria (Dufour) and Marocco (Ball). — Rarely cultivated (Goettingen, Paris).

This is a very variable species and a number of varieties have been described, but their characters seem to be rather inconstant and they ought to be considered only as slight forms.

A. All or several pairs of leaves connate.
B. Ovaries glabrous.
C. Leaves glabrous or nearly so.
D. Leaves elliptic to oblong, narrowed at the base.

Typical form.

f. TERNIFOLIA, Gussone, Syn. Fl. Sicul. **1**: 259 (1842).

L. implexa ternata, Willkomm & Lange, Prodr. Fl. Hisp. **2**: 331 (1870).

This form has the leaves in whorls of threes.

DD. Leaves narrowly oblong.

f. LONGIFOLIA, Gussone, Syn. Fl. Sicul. **1**: 259 (1842).

DDD. Leaves oval or obovate to oblong, the lower ones truncate or subcordate at the base.

E. Whorls of flowers few.

f. BALEARICA, De Candolle, Prodr. **4**: 331 (1830). — Loudon, Arb. Frut. Brit. **2**: 1047 (1838).

Caprifolium Balearicum, Dumont de Courset, Bot. Cult. ed. 2. **4**: 338 (1811). — Roemer & Schultes, Syst. Veg. **5**: 261 (1819).
L. Balearica, De Candolle, Flor. Franç. **6**: 499 (1815). — Viviani, Fl. Cors. 4 (1824). — Tenore, Fl. Nap. **3**: 213 (1824–29).
L. latifolia, Gussone, Fl. Sicul. Prodr. **1**: 250 (1827).
L. implexa hirsuta, Coutinho, Curso Silv. (Fl. lenh.) **2**: 111 (1887).
L. implexa exotricha, Candargy, Bull. Soc. Bot. France **44**: 457 (1897).
L. implexa endotricha, Candargy, *l. c.*

This form is more common than the type, and occurs throughout the whole range of the species. *L. implexa hirsuta* Coutinho and *L. implexa exotricha*, Candargy are slight variations with the corolla pubescent outside.

EE. Whorls of flowers 4–6, rather remote; also the middle leaves of the branches connate.

f. VERTICILLATA, Coutinho, Curso Silv. (Flor. lenh.) **2**: 110 (1887).

L. implexa Lusitanica, Coutinho, Herb. Esc. Polyt. exsicc., ex Mariz, Bol. Soc. Broter. **18**: 95 (1902).

Portugal: Alemtejo (Moller).

CC. Leaves puberulous or pubescent beneath.

f. PUBERULA, Perez Lara, An. Soc. Esp. Hist. Nat. **18**: 49 (1889); Fl. Gadit. 243 (1889). — Willkomm, Prodr. Fl. Hisp. Suppl. 134 (1893). — Mariz, Bol. Soc. Broter. **18**: 95 (1902).

CCC. Leaves whitish tomentose beneath.

f. VELUTINA, Pau, Not. Bot. Fl. Esp. 1:33 (1887), ex Willkomm, Prodr. Fl. Hisp. Suppl. 134 (1893).

Spain (ex Pau); Marocco (Ibrahim, ex Willkomm).

BB. Ovaries at the apex and corolla without glandular and pilose.

f. ADENOCARPA, Arcangeli, Comp. Fl. Ital. 318 (1882).

L. adenocarpa, Gussone, Suppl. Fl. Sicul. 58 (1832); Syn. Fl. Sicul. 1:260 (1842).
Caprifolium adenocarpum, K. Koch, Hort. Dendr. 293 (1853).

AA. Leaves all distinct or only the uppermost pair connate, elliptic, very glaucous beneath; corolla 3 cm. long, pilose without.

f. **Valentina**, forma nov.

L. Valentina, Willkomm, Oester. Bot. Zeitschr. **41**:52 (1891); Suppl. Prodr. Fl. Hisp. 134 (1893). — Mariz, Bol. Soc. Broter. **18**:81 (1901). — Pau, Bol. Soc. Esp. Hist. Nat. **1**:210 (1901).
Caprifolium Valentinum, Pau, Not. Bot. Fl. Esp. **3**:30 (1889), ex Ind. Kew.

Spain and Minorca (ex Pau); Portugal: "Figueira da Foz" (F. Loureiro).

148. L. CAPRIFOLIUM, Linné, Spec. Pl. **1**:173 (1753). — Jacquin, Fl. Austr. Ic. **4**:30. *pl 357* (1776). — Aiton, Hort. Kew **1**:230 (1789), in part. — Schmidt, Oester. Baumz. **2**:55. *pl. 105* (1794). — Smith, Engl. Bot. **12**. *pl. 790* (1801). — Hayne, Arzneygew. **2**. *pl. 37* (1809). — De Candolle, Prodr. **4**:331 (1830), in part. — Bertoloni, Fl. Ital. **2**:556 (1835). — Loudon, Arb. Frut. Brit. **2**:1045. *f. 798* (1838), in part. — Tausch, Flora **21**:734 (1838). — Ledebour, Fl. Ross. **2**:387 (1844). — Kirillow, Lonic. Russ. Reich. 17 (1849). — Grenier & Godron, Fl. France **2**:9 (1850). — Reichenbach, Ic. Fl. Germ. **17**:85. *pl. 1173. f. 1–3* (1855). — Pokorny, Oester. Holzpfl. 155. *pl. 29. f. 491–494* (1864). — K. Koch, Dendr. **2**[1]:7 (1872), in part. — Boissier, Fl. Or. **3**:4 (1875). — Arcangeli, Comp.

Fl. Ital. 317 (1882). — Dippel, Handb. Laubholzk. **1**:202 (1889), in part. — Koehne, D. Dendr. 555 (1893). — Britton & Brown, Ill. Fl. N. U. S. Can. **3**:237. *f. 3455* (1898). — Wolf, Isv. St. Peterb. Lesn. Inst. **3**:8 (1898). — Halacsy, Consp. Fl. Graec. **1**:698 (1901). — Penkowsky, Derev. Kust. Ross. **3**:20 (1901). — Schneider, Dendr. Winterstud. 216. *f. 204* (1903.)

Periclymenum Italicum, Miller, Gard. Dict. ed. 8 (1768).

Caprifolium hortense, Lamarck, Fl. Franç. **3**: 365 (1778). — Dumont de Courset, Bot. Cult. **2**: 576 (1802).

Caprifolium rotundifolium, Moench, Meth. Pl. 501 (1794). — Spach, Hist. Nat. Vég. **8**: 338 (1839).

L. suavis, Salisbury, Prodr. Stirp. Hort. Allerton 138 (1796).

L. rotundifolia, Medicus, Beytr. Pflanzenanat. **2**: 97 (1799). — Steudel, Nomencl. **2**: 67 (1841).

Caprifolium Italicum, Medicus, Beytr. Pflanzenanat. **2**: 97 (1799), not Schmidt. — Roemer & Schultes, Syst. Veg. **5**: 260 (1819).

Caprifolium vulgare, Medicus, Beytr. Pflanzenanat. **5**: 387 (1800).

Caprifolium Germanicum, Delarbre, Fl. d'Auvergn. ed. 2. 128 (1800.

Caprifolium perfoliatum, Roehling, Deutschl. Fl. ed. 2. **2**: 175 (1812).

Periclymenum perfoliatum, S. F. Gray, Nat. Arr. Brit. Plant. **2**: 487 (1821).

L. pallida, Host, Fl. Austr. **1**: 298 (1877). — Dupuis, Rev. Hort. IV. **5**: 141. *pl. 33* (1856).

L. Italica, Wood, Classb. Bot. **2**: 169 (1845), not Tausch.

L. perfoliata, Edwards, Phytol. II. **2**: 198 (1857), nom. nud.

Caprifolium perfoliatum pallidum, Schur, Oester. Bot. Zeitschr. **11**: 90 (1861).

Caprifolium pallidum, Schur, Enum. Pl. Transilv. 243 (1866).

Central Europe and Western Asia: from France to the Caucasus and Asia Minor (Schur, A. Braun, Radde, Vukotinovic, Engler, Kousnetzoff et al.). — Sometimes cultivated (Arnold Arboretum, etc.).

A. Tube of corolla 2–3 cm. long.

B. Corolla white or yellowish-white, sometimes blushed.

Typical form.

L. Caprifolium flavescens, Weston, Univ. Bot. Hort. **1**: 155 (1770).

L. Caprifolium α alba, Aiton Hort. Kew. **1**: 230 (1789).

L. Caprifolium β *praecox*, De Candolle, Fl. Franç. **4:** 270 (1805); Prodr. **4 :** 331 (1830).

Caprifolium Italicum a alba, Roemer & Schultes, Syst. Veg. **5 :** 260 (1819).

L. Caprifolium pallida, Lavallé, Arb. Segrez. 138 (1877).

L. Caprifolium verna, Lavallé, *l. c.*

BB. Corolla purple without, yellowish within.

f. PAUCIFLORA, Carrière, Fl. Serr. **11 :** 113 (1856).

L. Caprifolium β *rubra*, Tausch, Flora 21: 735 (1838), not Weston.

AA. Tube of corolla shorter, limb pilose outside.

f. ARMENA, Boissier, Diagn. Pl. Nov. Or. II. **2 :** 108 (1856). Armenia (ex Boissier).

Of the following three forms the first one is but a teratological form and the two others are nomina nuda.

f. APETALA, Kirschleger, Flora **31 :** 484 (1848).

f. VILLOSA, Lavallé, Arb. Segrez. 138 (1877), nom. nud.

f. PARVIFOLIA, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 449 (1903), nom. nud.

Though Linné included under his *L. Caprifolium* the present species and the following hybrid, there can be no doubt that he intended the name for the species growing wild in Middle Europe; this form is also the type according to the strictest rules of priority, since, as the first reference in Species Plantarum, the Hortus Cliffortianus is quoted where as the first variety, *Caprifolium Italicum perfoliatum praecox*, which is typical *L. Caprifolium*, is enumerated.

× L. ITALICA, Tausch, Flora **21 :** 735 (1838) = *L. Caprifolium* × *Etrusca*, Rehder in Bailey, Cycl. Am. Hort. **2 :** 942 (1900).

Periclymenum Americanum, Miller, Gard. Dict. ed. 8. (1768).

L. Caprifolium rubra, Weston, Univ. Bot. Hort. **1 :** 155 (1770). — Aiton, Hort. Kew. **1 :** 230 (1789).

L. Caprifolium sempervirens, Weston, *l. c.*

L. grata, Aiton, Hort. Kew. **1**: 231 (1789). — Willdenow, Spec. Pl. 1^2 : 894 (1797). — Persoon, Syn. Pl. **1**: 213 (1805). — De Candolle, Prodr. **4**: 332 (1830). — Darlington, Fl. Cestr. 159 (1837). — Loudon, Arb. Frut. Brit. **2**: 1048. *f. 805* (1838). — Torrey & Gray, Fl. N. Am. **2**: 5 (1841). — Gray, Bull. Torr. Bot. Club **10**: 94 (1883); Syn. Fl. N. Am. 1^2 : 17 (1884).

L. Caprifolium Italica, Schmidt, Oester. Baumz. **2**: 55. *pl. 106* (1794). — Endlicher, Cat. Hort. Vindob. **1**: 458 (1842). — Beck, Fl. Niederoester. 1131 (1890).

Caprifolium gratum, Borkhausen, Handb. Forstbot. 2: 1678 (1803). — Pursh, Fl. Am. Sept. **1**: 161 (1814). — Elliott, Sketch Bot. S. Carol. **1**: 272 (1821).

Caprifolium Italicum β rubrum, Roemer & Schultes, Syst. Veg. **5**: 260 (1819).

L. Caprifolium, Host, Fl. Austr. **1**: 297 (1827), in part.

L. Etrusca, Loudon, Arb. Frut. Brit. **2**: 1046. *f. 799* (1838), in part.

L. Caprifolium major, Carrière, Fl. Serr. **11**: 91. *pl. 1120* (1856). — Dippel, Handb. Laubholzk. 203 (1889).

Caprifolium perfoliatum genuinum, Schur, Oester. Bot. Zeitschr. **11**: 90 (1861.)

? *L. Etrusca rotundifolia*, Cariot, Etude des Fl. ed. 4. **2**: 277 (1864), ex Gandoger. — Cariot & St.-Lager, Bot. Elem. Descr. ed. 8. **2**: 378 (1897).

L. Americana, K. Koch, Wochenschr. Gaertn. Bot. **10**: 279 (1867); Dendr. 2^1: 8 (1872). — Dippel, Handb. Laubholzk. **1**: 203 (1889.) — Koehne, D. Dendr. 555 (1893).

? *L. Cariotii*, Gandoger, Flor. Lyon. 110 (1875).

France, near Lyon, and Istria, near Trieste, are the only localities from which I have seen specimens; it is apparently very rare even in regions where the two parent species occur, but it is often cultivated (Tausch, Dendrotheca exotico-bohemica!) and found sometimes escaped from gardens and naturalized; this might possibly also be the case in the localities mentioned above.

The following three forms are often cultivated; the first has pale purple, the second very dark purple flowers and the third sinuately dentate, often variegated leaves.

f. RUBELLA, Tausch, Flora **21**: 736 (1838).

L. Caprifolium β rubellum, De Candolle, Prodr. **4**: 331 (1830).

f. atrosanguinea, comb. nov.

? *L. Caprifolium ruberrimum*, Weston, Univ. Bot. Hort. **1**: 155 (1770).
L. atrosanguinea, Carrière, Rev. Hort. **1866**: 337 (1866).
Caprifolium atropurpureum, hort., ex K. Koch, Dendr. 2^1: 8 (1872).
L. Caprifolium atrosanguinea, Lavallé, Arb. Segrez. 138 (1877).

f QUERCIFOLIA, Tausch, Flora **21**: 736 (1838).

L. Caprifolium γ *erosum*, De Candolle, Prodr. **4**: 331 (1830).
L. Caprifolium variegata, Lavallé, Arb. Segrez. 138 (1877).
L. Caprifolium erosa variegata, hort., ex Lavallé, *l. c.*

L. Italica has usually been confounded with *L. Caprifolium* and with *L. Etrusca*, but is readily distinguished from either by the arrangement of the flowers and by the bractlets. *L. Caprifolium* has the whorls of flowers all in the axils of connate leaves and has no or very minute bractlets, while *L. Etrusca* has the whorls disposed in peduncled heads often in threes and has conspicuous bractlets almost as long as the ovaries. *L. Italica* is intermediate between the two, resembling sometimes more the one and sometimes the other: the one or two lower whorls are in the axils of connate leaves as in *L. Caprifolium* and the upper whorls are in the axils of bract-like leaves as in *L. Etrusca;* the bractlets are about half as long as the ovaries and also the color of the flowers and the texture, shape and size of the leaves is intermediate. These facts together with the apparent scarcity in the wild state (among more than 60 specimens of *L. Caprifolium* and *L. Etrusca* from different localities I found the form in question represented only twice from regions where both parents occur) lead me to the conclusion that *L. Italica* is a hybrid originated in regions where the areas of the two species overlap. Its frequency in cultivation is explained by its superior ornamental qualities; it blooms more profusely and a longer time than *L. Caprifolium* and is much hardier than *L. Etrusca*.

There can be no doubt that *L. Americana* of Koch and

later authors belongs to *L. Italica* and also *Periclymenum Americanum*, Miller and *L. grata*, Aiton can hardly be referred to any other species, though the descriptions of these species are rather short and the statement that the species is an American one would not be in favor of this identification. Miller, however, was not sure of the origin of this plant and says cautiously "it is supposed to grow naturally in North America." Pursh seems to have been the first botanist who found the plant he supposed to be the *L. grata* of Aiton in North America. As he quotes Hort. Angl. 15, no. 10, t. 8, which certainly belongs to *L. Italica*, as an illustration of his *Caprifolium gratum*, there can be little doubt that his plant was *L. Italica* escaped from cultivation. There has never been found in North America a plant undoubtedly native which could be referred to *L. grata* Ait., and therefore this species is now omitted from the more recent works on American plants or referred to *L. Caprifolium* as a naturalized plant.

149. L. STABIANA, "Gussone" Pasquale, Rendic. Acc. Sci. Fis. Mat. Napol. **13**: 142 (1875); Atti. Acc. Sci. Fis. Mat. Napol. 7^6: 2. *pl.* (1875).

L. Caprifolium Tenore, Syll. Pl. Napol. 104 (1831), not Linné.
L. Caprifolium Stabiana, Caruel in Parlatore, Fl. Ital. **7**: 122 (1886). — Martelli & Tanfani, N. Giorn. Bot. Ital. **24**: 179 (1892).
Caprifolium Stabianum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Italy: near Naples (Huet de Pavillon, Lehmann).

150. L. TRAGOPHYLLA, Hemsley, Jour. Linn. Soc. **23**: 367 (1888). — Rehder in Sargent, Trees & Shrubs **1**: 91. *pl. 40* (1903).

Caprifolium tragophyllum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

China: Hupeh (Henry, nos. 5898! 1707, 4010, Wilson, no. 1095); Szechuen (Farges, nos. 109, 834, v. Rosthorn); Kansu (Potanin.) — Rarely cultivated (Kew, ex Hand-l. Arb. Kew).

151. L. SPLENDIDA, Boissier, Elench. Pl. Nov. It. Hisp. 54 (1838); Voy. Bot. Esp. **2**: 276. *pl. 81* (1839–45). — Carrière, Fl. Serr. **11**: 117. *pl. 1130* (1856). — Willkomm & Lange, Prodr. Flor. Hisp. **2**: 331 (1870). — K. Koch Dendr. **2**[1]: 10 (1872). — Dippel, Handb. Laubholzk. **1**: 205. *f. 129* (1889). — Zabel, Gartenfl. **39**: 65. *f. 13* (1890). — Koehne, D. Dendr. 555 (1893).

Caprifolium splendidum, K. Koch, Hort. Dendr. 293 (1853).
L. affinis, hort., ex. Zabel, Gartenfl. **39**: 66 (1890), not Hook. & Arn.

Spain (Bourgeau, Campo, Willkomm). — Sometimes cultivated (Goettingen, etc.).

152. L. ETRUSCA, Santi, Viaggio Montam. **1**: 113. *pl. 1* (1795). — Savi, Fl. Pis. **1**: 236 (1798). — De Candolle, Fl. Franç. **5**: 500 (1815); Prodr. **4**: 331 (1830). — Bertoloni, Fl. Ital. **2**: 558 (1835). — Loudon, Arb. Frut. Brit. **2**: 1046 (1838), in part, excl. fig. — Grenier & Godron, Fl. France **2**: 10 (1850). — Verlot, Ind. Sem. Hort. Bot. Grenoble 11 (1852), ex Urban, Enum. Spec. Cat. Sem. Hort. Bot. 30. — Reichenbach, Ic. Fl. Germ. **17**: 85. *pl. 1172. f. 5* (1855). — Pokorny, Oester. Holzpfl. 156. *pl. 29. f. 499–503* (1864). — Willkomm & Lange, Prodr. Fl. Hisp. **2**: 332 (1870); Suppl. 135 (1893). — K. Koch, Dendr. **2**[1]: 9 (1872). — Boissier, Fl. Or. **3**: 5 (1875). — Arcangeli, Comp. Fl. Ital. 318 (1882). — Caruel in Parlatore, Fl. Ital. **7**: 123 (1886). — Dippel, Handb. Laubholzk. **1**: 204 (1889), in part. — Battandier & Trabut, Fl. Alg. 387 (1890). — Koehne, D. Dendr. 555 (1893). — Halacsy, Consp. Fl. Graec. **1**: 699 (1901). — Penkowsky, Derev. Kust. Ross. **3**: 19 (1901).

Caprifolium Periclymenum, Gouan, Hort. Monsp. 101 (1768), not Linné. — Balbis, Mém. Acad. Imp. Turin **1805–8**: 208 (1806).

L. Caprifolium, Schousboe, Jagt. Vextr. Marokko 87 (1800).
Caprifolium Etruscum, Roemer & Schultes, Syst. Veg. **5**: 261 (1819).
L. Hetrusca, Host, Fl. Austr. **1**: 298 (1827). — Bubani, Fl. Pyren. **2**: 335 (1900).
L. saxatilis, Mazziari, Fl. Corcyr. in Ion. Anthol. **5**: 210 (1835).
L. dimorpha, Tausch, Linnaea **21**[1], Beibl. 80 (1838).
Caprifolium flavum Rafinesque, Pl. exsicc., ex Gussone, Fl. Sicul. Syn. **1**: 260 (1843).
L. Caprifolium arborea, Clementi, Mem. Accad. Sci. Torino II. **16**: 281 (1857). — Tchihatcheff, Asie Min. Bot. **2**: 192 (1886).
L. Periclymenum, Rafinesque, ex Strobl, Oester. Bot. Zeitschr. **33**: 59 (1883).
Caprifolium dimorphum, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Mediterranean Region: Madeira to Kurdistan. (Gussone, Tommasini, Bourgeau, Kotschy, Schultz, Sintenis, Haussknecht, et al.) — Rarely cultivated (Paris, etc.).

Of this exceedingly variable species the following varieties have been distinguished:

A. Inflorescence glabrous or only corolla sparingly pilose.
B. Leaves more or less pubescent.
C. Corolla 4–5 cm. long.
D. Leaves only puberulous or somewhat pubescent beneath.

var. TYPICA, Halacsy, Consp. Fl. Graec. **1**: 699 (1901).

? *L. Etrusca glabrescens*, Zabel in Beissner, Schelle & Zabel, Handb Laubholz-Ben. 448 (1903), nom. nud.
? *L. pubescens*, hort. Simon-Louis, ex Zabel, *l. c.*

DD. Leaves pubescent on both sides.

var. PUBESCENS, Dippel, Handb. Laubholzk. **1**: 205 (1889).

? *L. mollis*, Vukotinovic, Rad. Jugos. Acad. Zagreb **2**: 45 (1880), ex Ind. Kew.
L. gigantea, Zabel, Gartenzeit. **1886**: 557. *f.* (1886), not Carrière. — Mottet, Rev. Hort. **1900**: 695 (1900).
L. Etrusca hirsuta, Post, Fl. Syr. Palest. 370 (1896).
? *L. Etrusca xylostemoides*, Candargy, Bull. Soc. Bot. France **44**: 457 (1897).
L. Etrusca superba, Nicholson, Hand-l. Arb. Kew. ed. 2. 441 (1902).
L. gigantea superba, hort., ex Nicholson, *l. c.*
L. Etrusca gigantea, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 448 (1903).
Caprifolium giganteum, hort. Gall., ex Zabel, *l. c.*

France (Endress); Sicily (Gussone); Palestine (Hayne).

CC. Corolla about 2.5 cm. long; leaves small.

var. PARVIFLORA, Vayreda, Pl. Not. Catal. 77 (1880).

BB. Leaves quite glabrous.

C. Leaves small, about 3 cm. long.

D. Upper leaves connate.

var. ROESERI, Boissier, Diagn. Pl. Nov. Or. II. **2**: 107 (1856); Fl. Or. **3**: 5 (1875). — Halacsy, Consp. Fl. Graec. **1**: 699 (1901).

L. Roeseri*, Heldreich mscr., in herb.! and ex Boissier, *l. c.

Greece (Heldreich!).

DD. All leaves distinct or nearly so.

var. **Reverchonii**, Willkomm, in sched. in exsicc. Reverchon, Pl. d'Esp. 1895.

Spain (Reverchon!).

CC. Leaves larger, usually glaucous beneath.

var. GLABRA, Lowe, Fl. Madeira **1**: 382 (1868).

***L. Cyrenaica*, Viviani, Fl. Lyb. Spec. 12. *pl. 8* (1824). — De Candolle, Prodr. 4: 331 (1830). — See also Cosson, Bull. Soc. Bot. France 12: 277 (1865).**

***Caprifolium Cyrenaicum*, K. Koch, Hort. Dendr. 293 (1853).**

? *L. gigantea*, Carrière, Rev. Hort. 1882: 558 (1882).

Mediterranean region: Madeira (ex Lowe); Istria (Schultz); Rhodos (Bourgeau); Asia Minor (Kotschy, Bornmueller, Sintenis).

AA. Inflorescence or only the corolla densely glandular.

B. Corolla densely glandular; peduncles and branchlets glabrous; leaves glabrous or pubescent beneath.

var. ADENANTHA Haussknecht, Mitth. Thüring Bot. Ver. II. **5**: 117; Symb. Fl. Graec. 99 (1893). — Halacsy, Consp. Fl. Graec. **1**: 699 (1901).

Greece (ex Haussknecht).

BB. Corolla, bractlets and peduncles glandular; branchlets and leaves glandular-pubescent.

C. Branchlets and leaves pubescent and glandular; leaves 6–9 cm. long, pale beneath.

var. glandulosa, Boissier, in herb.!

Asia Minor (Balansa, Pl. Or. 1855, no. 710!).

CC. Branchlets and leaves above densely glandular, leaves 3–4 cm. long, very glaucous beneath and less glandular.

var. VISCIDULA, Boissier, Diagn. Pl. Nov. Or. II. **2**: 107 (1856); Flor. Or. **3**: 5 (1875).—Post, Fl. Syr. Palest. 379 (1896).

L. viscidula, **Boissier, in herb.! and ex Boissier, *l. c.***
L. Etrusca hispidula, **Tchihatcheff, Asie Min. Bot. 2: 193 (1866), sphalmate.**

Asia Minor (Kotschy, nos. 79! 383!).

Kotschy's no. 383 approaches the preceding form and Boissier apparently merged afterwards his var. *glandulosa* into the var. *viscidula*, as he does not mention it again, but the two forms look remarkably distinct.

153. L. PERICLYMENUM, Linné, Spec. Pl. **1**: 173 (1753).—Aiton, Hort. Kew. **1**: 231 (1789).—Schmidt, Oester. Baumz. **2**: 56. *pl. 107* (1794).—Smith, Engl. Bot. **12**. *pl. 800.* (1801).—Persoon, Syn. Pl. **1**: 213 (1805).—Hayne, Arzneygew. **2**. *pl. 38* (1809) —Guimpel, Abb. Deutsch. Holzg. **1**: 17. *pl. 7* (1815).—Host, Fl. Austr. **1**: 299 (1827).—De Candolle, Prodr. **4**: 331 (1830).—Bertoloni, Fl. Ital. **2**: 561 (1835).—Loudon, Arb. Frut. Brit. **2**: 1043. *f. 799* (1838).—Spenner in Nees von Esenbeck, Gen. Pl. Fl. Germ. fasc. 21. *pl. 401* (1840).—Grenier & Godron, Fl. France **2**: 10 (1850).—Reichenbach, Ic. Fl. Germ. **17**: 85. *pl. 1172. f. 3, 4* (1855).—Pokorny, Oester. Holzpfl. 157. *pl. 29. f. 504–507*

(1864). — K. Koch, Dendr. 2[1]: 6 (1872). — Arcangeli, Comp. Fl. Ital. 318 (1883). — Caruel in Parlatore, Fl. Ital. 7: 125 (1886). — Dippel, Handb. Laubholzk. 1: 203 (1889). — Koehne, D. Dendr. 554 (1893). — Bubani, Fl. Pyren. 2: 334 (1900). — Halacsy, Consp. Fl. Graec. 1: 700 (1901). — Penkowsky, Derev. Kust. Ross. 3: 19 (1901). — Schneider, Dendr. Winterstud. 216. *f. 204* (1903).

Periclymenum vulgare, Miller, Gard. Dict. ed. 8 (1768). — S. F. Gray, Nat. Arr. Brit. Pl. 2: 488 (1821).
Caprifolium sylvaticum, Lamarck, Fl. Franç. 3: 365 (1778).
Caprifolium distinctum, Moench, Meth. Pl. 501 (1794).
L. odora, Salisbury, Prodr. Stirp. Hort. Allerton 138 (1796).
Caprifolium Periclymenum, Delarbre, Fl. d'Auvergne ed. 2. 1: 129 (1800). — Dumont de Courset, Bot. Cult. 2: 577 (1802). — Spach, Hist. Nat. Vég. 8: 334 (1839).
Caprifolium Germanicum, Roehling, Deutschl. Flor. ed. 2. 2: 175 (1812).
L. Germanica, Dietrich, Fl. Weimar 94 (1800).
L. Etrusca, Lejeune, Fl. Spa 2: 299 (1813), not Santi.
Euchylia verticillata, Dulac, Fl. Haut.-Pyrén. 464 (1867).
L. periclymena, St.-Lager, Ann. Soc. Bot. Lyon 8: 129 (1880).

Europe and North Africa: extending east to eastern Germany, Austria and Greece (Grisebach, Gansauge, Engler, Uechtritz, Winkler, Willkomm et al.). — Often cultivated as an ornamental vine (Arnold Arboretum, etc.).

A. Leaves glabrous or slightly villous beneath, usually obtusish.
B. Flowers 4–5 cm. long.
C. Leaves entire.
D. Leaves slightly villous beneath, oval or ovate to elliptic; flowers yellowish-white often pinkish outside.

Typical form.

L. Periclymenum alba, Weston, Univ. Bot. Hort. 1: 155 (1770).
L. Periclymenum a vulgaris Aiton, Hort. Kew 1: 231 (1719).
? ***L. Periclymenum villosa***, Tenore, Syll. Pl. Fl. Neap. 104 (1831).
L. pallidiflora, Gandoger, Fl. Lyon. 110 (1875).

The following horticultural forms belong probably here; the first has yellowish foliage and the second is a low

bushy form; the third form is probably only an abnormality.

f. AUREA, Linden & André, Ill. Hort. **18**: 75. *pl. 59.* (1871).

f. FRUTICOSA, Zabel, Gartenfl. **38**: 492 (1889).

f. PHYLLANTHA, Gandoger in Cariot, Étude des Fl. ed. 5. **2**: 278 (187?), ex Gandoger. — F. Gérard, Rev. de Bot. **8**: 121 (1890).

L. virescens, Gandoger, Fl. Lyon. 110 (1875).

Rhône valley, near Alix (ex Gandoger); Vosges, near Epinal (ex Gérard).

DD. Leaves quite glabrous, elliptic to oblong, longer petioled.

E. Flowers pale purple without, fading usually to yellowish; plant less twining.

f. BELGICA, Aiton, Hort. Kew **1**: 231 (1789). — Loudon, Arb. Frut. Brit. **2**: 1044 (1838).

Periclymenum Germanicum, Miller, Gard. Dict. ed. 8 (1768).
L. Germanica, Weston, Univ. Bot. Hort. **1**: 155 (1770).
Caprifolium Germanicum, Dumont de Courset, Bot. Cult. **2**: 577 (1802).

EE. Flowers dark purple without, fading to pale purple; flowering late and profusely.

f. SEROTINA, Aiton, Hort. Kew **1**: 231 (1789). — Schmidt, Oester. Baumz. **2**: 56. *pl. 108* (1794). — Loudon, Arb. Frut. Brit. **2**: 1044 (1838). — Dippel, Handb. Laubholzk. **1**: 204 (1889).

? *L. Periclymenum rubra*, Weston, Univ. Bot. Hort. **1**: 155 (1770).
Caprifolium serotinum, Dumont de Courset, Bot. Cult. **2**: 577 (1802).
L. serotina, Gandoger, Flor. Lyon. 110 (1875).
L. Periclymenum autumnalis, "DC., Flor. Franç.", ex Gandoger, *l. c.*
Caprifolium semperflorens, hort., ex Dippel, Handb. Laubholzk. **1**: 204 (1889).
L. semperflorens, Goldring, Gard. **45**: 307. *pl. 957* (1894).

CC. Leaves sinuately dentate and often variegated.

f. QUERCINA, Weston, Univ. Bot. Hort. **1**: 155 (1770).

L. Periclymenum quercina variegata, Weston, *l. c.*

L. Periclymenum δ quercifolia, Aiton, Hort. Kew. **1**: 231 (1789). — Loudon, Arb. Frut. Brit. **2**: 1044 (1838). — Dippel, Handb. Laubholzk. **1**: 204 (1889).

Caprifolium quercifolium, Dumont de Courset, Bot. Cult. **2**: 577 (1802). — Meigen, Syst. Verz. Rhein. 35 (1819), ex Ind. Kew.

L. Periclymenum sinuata, Loiseleur-Deslongchamps in Duhamel, Trait. Arb. Arbust. ed. 2. **1**: 47 (1801).

Periclymenum vulgare quercifolium, S. F. Gray, Nat. Arr. Brit. Pl. **2**: 488 (1821).

L. Periclymenum quercifolia variegata, hort., ex Dippel, Handb. Laubholzk. **1**: 204 (1889).

BB. Flowers smaller, purple outside.

f. **minor**, Lange, in herb.!

AA. Leaves pubescent on both sides, glaucous beneath, ovate to elliptic-ovate, acute.

var. GLAUCO-HIRTA, Kunze, Flora **29**: 639 (1846).

L. Hispanica, Boissier & Reuter, Pugill. Pl. Nov. 52 (1852). — K. Mueller in Walpers, Ann. Bot. Syst. **5**: 95 (1858). — Willkomm & Lange, Prodr. Fl. Hisp. **2**: 232 (1870). — Laguna, Fl. For. Esp. **2**: 49. *pl. 75. f. 1* (1890). — Mariz, Bol. Soc. Broter. **18**: 99 (1901).

L. Periclymenum Hispanica, Ball, Jour. Linn. Soc. **16**: 482 (1878). — Perez Lara, An. Soc. Esp. Hist. Nat. **18**: 50 (1889).

Spain (Wilkomm, no. 146! Bourgeau); Morocco (Ball).

A doubtful form is the following.

f. MONGOLICA, "hort." Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 448 (1903), nom. nud.

Subsect. 24. THORACIANTHAE, Rehd.

Lonicera § *Thoracianthae*, Rehder in Sargent, Trees & Shrubs **1**: 47 (1902).

This group contains only one species which seems to be restricted to the Kuram Valley of Afghanistan. A twining shrub with glabrous branches and glabrous leaves, the lower ones slender petioled, those of the uppermost pair short-petioled and usually suborbicular; flowers in dense peduncled solitary heads; bractlets of each whorl connate into a cupula about as high as the ovaries; calyx rather large, pilose, also ovaries and usually the cupula sparingly pilose and glandular; corolla two-lipped, about 2.5 cm. long, tube about as long as limb, glandular and pilose without, glabrous within; style pilose about the middle.

154. L. GRIFFITHII, Hooker f. & Thomson, Jour. Bot. Linn. Soc. **2**:173 (1858), — Aitchison, Jour. Bot. Linn. Soc. **18**:64 (1881). — Buser in Boissier, Flor. Or. Suppl. 275 (1888). — Rehder in Sargent, Trees & Shrubs **1**:47. *pl. 24* (1902).

Afghanistan (Griffith! Aitchison). — Rarely cultivated (Darmstadt, ex Purpus, Mitt. Deutsch. Dendr. Ges. **10**:45).

IMPERFECTLY KNOWN SPECIES.

155. L. SPEC., Faurie, no. 7380 (Japan, Montagne de Riishi), in herb. Paris.

Glabrous; leaves oval to ovate, 2–2.5 cm. long, short-petioled; peduncles in the axils of the upper leaves, 6–8 mm. long; bracts about half as long as the ovaries, obtusish; bractlets wanting; ovaries nearly connate; calyx teeth ovate, short; corolla (in bud) gibbous at the base.

Apparently belonging to the subsection Purpurascentes near *L. linderifolia*.

156. L. SPEC., Potanin, Kansu (fluv. Pei-shu, 22/6 1885), in herb. Petrop.

Branchlets and petioles puberulous when young; leaves

short-petioled, oval to obovate-oblong or oblong, obtuse, sparingly villous when young, glabrous and chartaceous at maturity, 1–1.5 cm. long; peduncles 8–10 mm. long; bracts ovate, acute, ciliate, scarcely half as long as the fruit; bractlets wanting; calyx persistent; ovaries wholly connate forming a globose fruit about 6 mm. in diameter with few seeds.

Apparently closely allied to *L. Tangutica*, *L. inconspicua* and *L. serpyllifolia*.

157. L. SPEC., Henry, no. 5707 (Szechuen, S. Wushan), in herb. Kew and Berlin.

Branchlets glabrous; leaves ovate to oblong-ovate, 5–7 cm. long, broadly cuneate or rounded at the base, acute, glaucescent beneath, glabrous except slightly ciliate toward the base; peduncles at the base of the branchlets, upright, straight, hirsute; bractlets oblong-lanceolate, pilose, about as long as the fruit; berries distinct, glabrous.

It apparently belongs to the subsection Bracteatae and seems allied to *L. strophiophora*.

HYBRIDS.

Spontaneous hybrids are apparently very rare in the genus *Lonicera;* of the subgenus Periclymenum *L. Caprifolium* × *Etrusca* and *L. Caprifolium* × *implexa* have been found and probably also *L. Etrusca* × *implexa* occurs wild, while in the subgenus Chamaecerasus only the still doubtful *L. Xylosteum* × *nigra* has been reported as found in a wild state. A great number of hybrids, however, have originated in cultivation, particularly in the subsections Ochranthae and Tataricae and between them and also in the subgenus Periclymenum. All were raised unintentionally without artificial aid in gardens and nurseries where the different species grew close together and seeds were collected from them. So much inclined are some

species of the subsection Ochranthae, especially *L. Ruprechtiana* and *L. Morrowii*, to hybridize with *L. Tatarica* that it is almost impossible to raise them true from seed if *L. Tatarica* grows near the mother plant; consequently the typical species have become comparatively rare in gardens, while the hybrids are often met with. These hybrids fruit as profusely as the species and seedlings raised from their seeds show almost invariably a reversion to *L. Tatarica;* probably they are usually fertilized by the pollen of that species.

I. Subgen. Chamaecerasus.

2. Sect. Isika.

12 × 14. Subsect. Distegiae × Alpigenae.

60 × 62. L. Ledebourii × Alpigena, Zabel, Gartenfl. **38**: 580 (1889).

L. propinqua, Zabel, *l. c.*
L. propinqua superalpigena, Zabel, *l. c.*

Originated in the botanic garden at Muenden! and is sometimes cultivated (Arnold Arboretum, etc.).

A very interesting hybrid showing in its two forms, one more resembling the *L. alpigena*, the other more the *L. Ledebourii*, clearly its origin by its curiously mixed characters.

2 × 3. Sect. Isika × Coeloxylosteum.

15 × 16. Subsect. Rhodanthae × Tataricae.

87 × 89. L. nigra × Tatarica, Zabel, Mitt. Deutsch. Dendr. Ges. 10: 99 (1901).

L. micrantha, Zabel, Gartenfl. **38**: 524 (1889), in part, not Regel. — Dippel, Handb. Laubholzk. **1**: 232. *f. 148* (1889). — Rehder, Gartenfl. **42**: 100 (1893).

L. micranthoides, Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 99 (1901).
L. Vogesiaca, Dippel, in sched., ex Zabel, *l. c.*

Zabel distinguishes two forms of it; the first resembles more the *L. Tatarica*, while the second has small deformed flowers.

f. PERMIXTA (*L. micranthoides* × *Tatarica*), Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 95 (1901).

L. permixta, Zabel, Gartenfl. **38**: 523 (1889).

f. PSEUDOMISERA (*L. micranthoides* × *Xylosteum*), Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 95 (1901).

The origin of *L. micranthoides* is uncertain, but it has long been in cultivation (Goettingen, Muenden! etc.); the two forms mentioned above were raised from seeds of *L. micranthoides*, the first was in cultivation in Muenden! and the second probably is now in Mr. Zabel's private garden at Gotha.

15 × 17. Subsect. RHODANTHAE × OCHRANTHAE.

87 × 95. L. NIGRA × XYLOSTEUM, Bruegger, Jahresb. Naturf. Ges. Graubuendten II. **29**: 95 [50] (1885). — Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 89 (1901).

L. Helvetica, Bruegger, *l. c.*, found near Sempach, Switzerland (ex Bruegger).

f. MISERA, Zabel, *l. c.*

L. misera (*L. micrantha* × *Xylosteum*), Zabel, Gartenfl. **38**: 523 (1889).

A form with deformed very small flowers, originated in the botanic garden at Muenden! A specimen of the same form in the herb. Bernhardi (herb. Mo. Botanical Garden) shows that this hybrid must have originated also

elsewhere and probably earlier; unfortunately no locality and no date are given.

3. Sect. Coeloxylosteum.

16. Subsect. Tataricae.

86 × 87 L. Tatarica × Korolkovii.

L. amoena (*floribunda* × *Tatarica*), Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 96 (1901).

Originated in Mr. Zabel's private garden in Gotha (herb. Zabel!) from seeds of *L. Korolkovii* collected at Muenden.

f. rosea, Zabel, *l. c.*

f. alba, Zabel, *l. c.*

16 × 17. Subsect. Tataricae × Ochranthae.

89 × 93. L. Tatarica × Ruprechtiana, Zabel, Gartenfl. **38**: 525 (1889).

L. notha, Zabel, *l. c.*
L. Ruprechtiana carnea, *striata*, and *rosea*, Dippel, Handb. Laubholzk. **1**: 237 (1889).

Originated first from seeds distributed by the botanic garden of St. Petersburg as *L. Ruprechtiana;* now often planted as an ornamental shrub (Arnold Arboretum, etc.).

f. alba, f. gilva, f. carneo-rosea, f. grandiflora, and f. ochroleuca, Zabel, *l. c.*, differ chiefly by the color of the flowers.

Here belongs probably the following form which may be a hybrid between *L. Ruprechtiana* and a small-flowered form or hybrid of *L. Tatarica*. It originated in the nursery of Dr. Dieck at Zoeschen near Merseburg (Goettingen, Muenden).

× L. SALICIFOLIA (*L. micrantha* × *Ruprechtiana*), Zabel, Gartenfl. **38**: 524 (1889).

L. Ruprechtiana salicifolia, Dieck, ex Dippel, Handb. Laubholzk. **1**: 237 (1889).

89 × 94. L. TATARICA × MORROWII, Zabel, Gartenfl. **38**: 525 (1889).

L. bella, Zabel, *l. c.*
L. Morrowii rosea, Dippel, Handb. Laubholzk. **1**: 225 (1889).

Like the preceding hybrid, this was raised from seed distributed by the botanic garden of St. Petersburg as *L. Morrowii* and it is now not uncommon in cultivation (Arnold Arboretum, etc.).

f. CANDIDA, f. ALBIDA, f. INCARNATA, f. ROSEA, and f. ATRO-ROSEA, Zabel, *l. c.*, differ chiefly by the color of the flowers.

Here may be inserted the following form originated from seed of *L. Morrowii* in the botanic garden at Muenden; the other parent is probably a small-flowered form or a hybrid of *L. Tatarica*. — Sometimes cultivated (Arnold Arboretum, etc.).

× L. MINUTIFLORA (*L. micrantha* × *Morrowii*), Zabel, Gartenfl. **38**: 523 (1889).

89 × 93 × 94. L. (TATARICA × MORROWII) × RUPRECHTIANA.

L. Muendeniensis (*L. bella* × *gibbiflora*), Rehder, Gartenfl. **42**: 102, *f. 18, 4–6* (1893).

Originated in the botanic garden at Muenden from seed of *L. bella* (Goettingen, Muenden, Arnold Arboretum).

89 × 95. L. TATARICA × XYLOSTEUM, Rehder, Gartenfl. **42**: 100 (1893), in part. — Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 94 (1901).

L. xylosteoides, Tausch, Flora, **21**[2]: 736 (1838).
L. Nepalensis, Kirchner, Arb. Musc. 439 (1864).

? *L. Tatarica micrantha*, Regel, Gartenfl. **10**: 258. *pl. 627. f. 6* (1869), not Trautvetter; Ind. Sem. Hort. Petrop. **1869**: 19 (1870).
L. micrantha, Zabel, Gartenfl. **38**: 524 (1889), in part, not Regel.
L. coerulescens Dippel, Handb. Laubholzk. **1**: 233. *f. 149* (1889).—Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 94 (1901).
Caprifolium coerulescens, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

Origin unknown, but it probably originated at different places, and as early as in the beginning of last century; according to Tausch it was not uncommon in the gardens near Prag; his type specimens distributed in his Dendrotheca exotico-bohemica (herb. Mo. Botanical Garden!) and a specimen collected by G. Engelmann in "hort. Saltzwedel" near Frankfurt (herb. Mo. Botanical Garden), agree very well with the form described by Dippel as *L. coerulescens* which I found in 1887 in the nursery at Muskau, Silesia, among *L. Tatarica* and sent to him with a note that I thought it to be a hybrid of *L. Tatarica* and *Xylosteum* (Arnold Arboretum, Goettingen, Muenden, etc.)

17. Subsect. Ochranthae.

90 × 91. L. Ruprechtiana × Morrowii, Rehder, Gartenfl. **42**: 100. *f. 18. 1–3* (1893).

L. Muscaviensis, Rehder, *l. c.*

Originated in the nurseries at Muskau, Silesia, from seeds received from the botanic garden of St. Petersburg as *L. Morrowii* (Arnold Arboretum, etc.).

95 × 96. L. Xylosteum × chrysantha, Rehder, Gartenfl. **42**: 100 (1893).

L. Regeliana, Dippel, Handb. Laubholzk. **1**: 220. *f. 140* (1889), in part, not Kirchner.
L. pseudochrysantha, A. Braun, in herb. Berlin.!

Of unknown origin. The description of Dippel does not agree with specimens of *L. Regeliana* from Muskau which represents but a form of *L. chrysantha* with

smaller flowers, but it agrees well with a plant I found without name in the botanic garden at Goettingen and with the *L. pseudochrysantha*, A. Br., "Hort. Berol." (in herb. Berlin.).

95 × 102. L. Xylosteum × quinquelocularis, Rehder, Gartenfl. **42**: 100 (1893). — Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 93 (1901).

L. Segreziensis, Lavallé, Arb. Segrez. 142 (1877), nom. nud. — Dippel, Hand. Laubholzk. **1**: 221 (1889). — Zabel, Mitt. Deutsch. Dendr. Ges. **10**: 93 (1901).
L. diversifolia, hort. ex Lavallé, *l. c.*, not Wallich.
L. hispida, hort., ex Dippel, *l. c.*, not Pallas.
Caprifolium Segreziense, Kuntze, Rev. Gen. Pl. **1**: 274 (1891).

In the botanic garden at Muenden raised from seed of *L. quinquelocularis*, but the form first described as *L. Segreziensis* is of unknown origin. Zabel distinguishes the following two forms:

f. super-Xylosteum, Zabel, *l. c.*

f. Pseudo-Xylosteum, Zabel, *l. c.*

II. Subgen. Periclymenum.

21 × 22. Subsect. Phenianthi × Cypheolae.

132 × 144. L. sempervirens × hirsuta.

L. Etrusca Brownii, Regel, Gartenfl. **2**: 3. *pl. 38* (1853).
L. Brownii, Carrière, Fl. Serr. **11**: 123. *pl. 1133* (1856). — May, Rev. Hort. **1875**: 280 (1875). — Rehder in Bailey, Cycl. Am. Hort. **2**: 942 (1900).
L. occidentalis, K. Koch, Dendr. **2**[1]: 14 (1872), not Hooker.
L. sempervirens Brownii, Lavallé, Arb. Segrez. 139 (1877).
L. ciliosa depressa glabrescens, Zabel in Beissner, Scheile & Zabel, Handb. Laubholz-Ben. 450 (1903).

The following forms all resemble *L. sempervirens* much more than *L. hirsuta* and are probably the product of

recrossing *L. Brownii* with *L. sempervirens* or of reversions:

Caprifolium puniceum, Kirchner, Arb. Musc. 430 (1864.)
L. Plantierensis, André, Ill. Hort. 18:233. *pl. 86* (1871).
L. occidentalis Youngii, hort., ex K. Koch, Dendr. 2¹:14 (1872).
L. fuchsioides, hort., ex K. Koch, *l. c.*, not Hemsley.
L. punicea, hort., ex K. Koch, *l. c.*, not Sims.
L. sempervirens fuchsioides, Lavallé, Arb. Segrez. 139 (1877), nom. nud. — Rehder in Bailey, Cycl. Am. Hort. 2:943 (1900).
L. occidentalis Plantierensis, Lavallé, *l. c.*
L. sempervirens punicea, Dippel, Handb. Laubholzk. 1:214 (1889).
L. ciliosa Youngii, Dippel, *l. c.* 215.
L. ciliosa Plantierensis, Dippel, *l. c.*
L. sempervirens, Sargent, Gard. & For. 9:496. *f. 70* (1896), not Linné.
L. Brownii Plantierensis, Rehder in Bailey, Cycl. Am. Hort. 2:942 (1900).
L. Plantierensis fuchsioides, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 451 (1903).
L. Plantierensis Youngii, Zabel, *l. c.*
L. Plantierensis punicea, Zabel, *l. c.*

I cannot find any other explanation of *L. Brownii* than to take it as an hybrid of *L. sempervirens* and *L. hirsuta*. The rather long tube and short limb and the color of the corolla as well as the inflorescence and the general appearance of the plant show the influence of *L. sempervirens* from which it strongly differs by the two-lipped corolla. The pubescence of the under side of the leaves, of the style, the filaments and the outside of the corolla show that a pubescent species of the subsection Cypheolae must be the other parent; the sparse glandular pubescence on the petioles and on the outside of the flowers and the scattered hairs which are often found on the margins of the leaves particularly near the base make it highly probable that *L. hirsuta* is the other parent, no other species of the Cypheolae having ciliate leaves together with glandular pubescence. That *L. ciliosa* entered into the parentage is the less probable as it has always been very rare in cultivation.

21 × 23. Subsect. PHENIANTHI × EUCAPRIFOLIA.

132 × 148 × 152. **L. sempervirens × (Caprifolium × Etrusca).**

L. Heckrottii, Rehder in Bailey, Cycl. Am. Hort. **2**: 942 (1900).

This curious honeysuckle has been offered for a number of years by American nurseries as *L. Heckrottii*, but I was not able to learn anything about its origin. The shape of the corolla is almost like that of the subsection Eucaprifolia except that the tube is slightly ventricose below the middle and slightly hairy within, while the inflorescence is very different and resembles closely that of *L. sempervirens* or *L. interrupta*. In regard to the large bractlets, the elongated inflorescence and the foliage, it seems most probable that either *L. Etrusca* or *L. Italica* have entered into the parentage, while the inflorescence shows the influence of *L. sempervirens*. The hardiness of the hybrid and also the scarcity of *L. Etrusca* in cultivation make it more probable that *L. Italica* is the other parent.

22. Subsect. CYPHEOLAE.

142 × 144. L. DIOECA × HIRSUTA (*glauca* × *hirsuta*), Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 450 (1903).

L. hirsuta involucrata, Lavallé, Arb. Segrez. 139 (1877), nom. nud.
L. involucrata, hort., ex Lavallé, *l. c.* and ex Zabel, *l. c.*

Zabel also refers *L. glaucescens*, Rydberg, with its synonym *L. Douglasii*, Hooker, to this hybrid, but *L. glaucescens* is certainly no hybrid, as its geographical distribution and its characters clearly show.

142 × 145. L. DIOECA × SULLIVANTII (*glauca* × *Sullivantii*), Zabel, *l. c.*

L. glauca, hort., not Hill, ex Zabel, *l. c.*
L. Epsomiensis, hort., ex K. Koch, Dendr. **2**[1]: 12 (1872) & ex Zabel *l. c.*
L. flava, hort., not Sims, ex Zabel, *l. c.*

142 × 146. L. dioeca × flava.

L. flava, Borie, Rev. Hort. IV. 5 : 221. *pl. 12* (1856).

This hybrid seems to occur sometimes in gardens under the name *L. flava*.

144 × 145. L. HIRSUTA × SULLIVANTII, Sargent, Gard. & For. 9 : 344. *f. 46* (1896).

This hybrid originated probably in the botanic garden at Cambridge, Mass., where it was first noticed by Prof. Sargent and it is still in cultivation there.

144 × 146. L. hirsuta × flava.

L. Douglasii, K. Koch, Dendr. 2 : 12 (1872), not De Candolle.
Caprifolium Douglasii, hort., not Lindley, ex Dippel, Handb. Laubholzk. 1 : 210 (1889).

This form is found in cultivation as *L. flava*, *Douglasii* and *hirsuta* (Goettingen, Arnold Arboretum, etc.). Koch and Zabel consider it a hybrid of *L. hirsuta* and *dioeca*, but the plants I saw suggested the parentage given above.

145 × 146. L. SULLIVANTII × FLAVA, Zabel in Beissner, Schelle & Zabel, Handb. Laubholz-Ben. 450 (1903).

L. flava, hort., not Sims, ex Zabel, *l. c.*
L. Schmitziana, hort., ex Zabel, *l. c.*

I have seen no plant which would suggest a cross between these two species.

23. Subsect. EUCAPRIFOLIA.

147 × 148. L. implexa × Caprifolium.

A specimen which I take to represent this hybrid was collected by Tommasini near Trieste (in herb. Berlin!). It generally resembles *L. implexa*, but the leaves are larger and thinner, the corolla more deeply two-lipped, only

slightly hairy within and the almost glabrous style somewhat longer than the stamens.

147 × 152. **L. implexa × Etrusca.**

This hybrid resembles much *L. Italica*, but the leaves are of firmer texture, the limb of the corolla shorter and the stamens only about half as long as the limb.

Formerly cultivated in the botanic gardens at Berlin, Leipzig, Paris (in herb. Berlin!). I also noticed it in the former Arboretum Lavallé at Segrez, and in the Mo. Botanical Garden herbarium I found a specimen collected at Montand, France (Castagne, 1846).

148 × 152. L. Caprifolium × Etrusca Rehder = *L. Italica* Tausch. — See p. 190.

148 × 153. **L. Caprifolium × Periclymenum.**

Similar to *L. Periclymenum*, but the uppermost pair of leaves connate at the base, forming a disk constricted at the middle; bractlets about one-third as long as the ovaries, and the corolla but sparingly glandular and hairy outside.

Jura Mtns., "Neocom" (ex herb. C. H. Godet, in herb. Gray.).

152 × 153. L. Etrusca × Periclymenum, Mottet, Rev. Hort. **1900**: 695 (1900).

Mottet refers here the *L. gigantea* Zabel (see under *L. Etrusca pubescens*, Dippel, p. 195).

DOUBTFUL SPECIES.

L. flexuosa, Franchet & Savatier, Enum. Pl. Jap. **2**: 384 (1879), not Thunberg.

According to Franchet's opinion *L. flexuosa*, Thunb. is very distinct from *L. Japonica* and he describes as *L. flexuosa* an upright shrub with coriaceous, ovate or

obovate leaves, 2.5–3.5 cm. long, pubescent; berries black, sessile, with deciduous calyx teeth; bracts subulate, about 1 cm. long. I have not seen Franchet's specimen and no Japanese species to which his description could apply. Thunberg's *L. flexuosa*, according to Maximowicz who saw the type specimen, is not specifically distinct from *L. Japonica*.

L. COCCINEA, Burgsdorf, Anl. Erz. Holzart **2**:138 (1787), nom. nud.

L. FLORIDA, Regel, Cat. Pl. Hort. Aksakov. 86 (1860).

Without description and enumerated with a question mark.

L. GLABRA, "Boissier herb.", Tchihatcheff, Asie Min. Bot. **2**:193 (1866).

"Species nondum descripta * * * rupestribus lacus Egerdir."

L. MICROPODA, Gardn. Chron. II. **26**: 628 (1886).

Apparently a lapsus calami for *L. brachypoda;* the name appears in a short note saying that a branch with spirally twisted leaves was shown.

L. MONTANA, hort., ex Loudon, Arb. Frut. Brit. **4**:2572 (1838).

"There is a plant under this name in the Horticultural Society's garden."

L. MOURAVIAE, hort., ex Lavallé, Arb. Segrez. 141 (1877), nom. nud.

This may be a misspelling for *L. Morrowii*.

L. MOURADI, "J. Linden", Bull. Fédér. Soc. Hort. Belg. **1883–85**: 558 (1887), nom. nud.

Probably like the preceding a misspelling for *L. Morrowii*.

L. QUADRIFOLIA, Willdenow, Spec. Pl. **1**[2]: 986 (1797).

A doubtful species of unknown origin; it may be either an abnormal form of *L. Tatarica* or may not at all belong in this genus.

L. SCHMITZIANA, "Rözl" Kirchner, Arb. Muscav. 440 (1864).

Said to be a native of Mexico and to flower bright red. From this statement may be inferred that the original *L. Schmitziana* was either *L. Mexicana* or *L. pilosa*, but the plant I found in 1888 still growing in the Aboretum at Muskau, Silesia, was *L. Orientalis*.

L. SMITHIANA, Jacob-Makoy, Belg. Hort. **14**: 356 (1864).

This is probably the same as the preceding and as it is called a "chèvrefeuille" with magnificent red flowers, it is probably *L. pilosa*. It seems to have disappeared entirely from cultivation soon after its introduction.

L. VARIEGATA, Regel, Cat. Pl. Hort. Aksakov. 86 (1860).

Like *L. florida*, enumerated without description and with a question mark.

CAPRIFOLIUM INDICUM, Kirchner, Arb. Musc. 430 (1864), nom. nud.

Probably a species of the section Nintooa.

CHAMAECERASUS FLAVESCENS, Billiard, L'Hort. Franç. 1861: 256, nom. nud.

FOSSIL SPECIES.

L. DEPERDITA, Heer, Fl. Tert. Helv. **3**: 24. *pl. 104. f. 19* (1859).

Only fruits have been found near Oeningen; Schenk* and Zittel† say that they probably do not belong to *Lonicera* at all, but resemble much more a fruit of a Labiate or Asperifoliacea. Zittel, however, is inclined to refer the fruits of Heer's *Cornus Deickii* to the genus *Lonicera*.

L. PRISCA, Ettingshausen, Denkschr. Akad. Wiss. Wien **54**: 319. *pl. 5. f. 8, 9* (1888); **58**: 282 (1891).

Only leaves are known, found near Leoben and near Schoenegg in Styria. Ettingshausen's assertion that it closely resembles *L. nigra*, seems correct as far as can be judged from his illustration.

Excluded Species.

Caprifolium arboreum, Noronha, Verh. Bat. Gen. **1**[4]: 9 (1790), ex ed. 2. **5**: 71 (1827) = *Clerodendron* spec.

C. cristatum, Noronha, *l. c.* = *Clerodendron* spec.

C. ovatum, Noronha, *l. c.* = *Clerodendron serratum*, Spreng.

C. paniculatum, Noronha, *l. c.* = *Clerodendron* spec.

C. reclinatum, Noronha, *l. c.* = *Clerodendron* spec.

C. scarlatinum, Noronha, *l. c.* = *Clerodendron* spec.

C. sericeum, Noronha, *l. c.* 70 = *Clerodendron* spec.

C. viticifolium, Noronha, *l. c.* 71 = *Clerodendron* spec.

Chamaecerasus fruticosa, "Persoon", ex Seringe in De Candolle, Prodr. **2**: 537 (1825), is a mistake for *Prunus Chamaecerasus*, Persoon.

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* Handb. Bot. **4**: 267 (1890).

† Handb. Palaeont. 616 *f. 338, 3, f. 401, 9.*

Lonicera alba, Linné, Spec. Pl. **1**:175 (1753) = *Chiococca alba* Hitchc.

L. bubalina, Linné f., Suppl. Pl. Syst. Veg. 146 (1781) = *Burchellia Capensis*, R. Br.

L. corymbosa, Linné, Spec. Pl. **1**:175 (1753) = *Loranthus tetrandrus*, Ruiz & Pav.

L. Davurica, Pallas, Fl. Ross. **1**. *pl. 38* (1784). — Sievers, Neue Nord. Beytr. **7**:198 (1796) = *Viburnum Davuricum*, Pall.

L. Diervilla, Linné, Spec. Pl. **1**:175 (1753) = *Diervilla Lonicera*, Miller.

L. glaucophylla, Hooker f. & Thomson, Jour. Linn. Soc. **2**:165 (1858) = *Leycesteria glaucophylla*, Hook. f.

L. gracilis, Kurz, Jour. As. Soc. Beng. **39**^{2}:77 (1870) = *Leycesteria glaucophylla*, Hook, f.

L. Marilandica, Linné, Spec. Pl. **1**:175 (1753) = *Spigelia Marilandica*, Linn.

L. Mongolica, Pallas, Fl. Ross. **1**:59 (1784) = *Viburnum Davuricum*, Pall.

L. multiflora, "Lam.",* Jaeger, Ziergeh. 294 (1865), not Champion = *Diervilla floribunda*, Sieb. & Zucc.

L. parasitica, Linné, Spec. Pl. **1**:175 (1753) = *Loranthus loniceroides*, Linn.

L. racemosa, Auct., ex Steudel, Nomencl. ed. 2. **2**:67 (1841) = *Symphoricarpus racemosus*, Michx.

L. Sicula, Ucria in Roemer, Arch. Bot. **1**^{1}:68 (1796) = *Putoria Calabrica*, Pers.

L. stipulata, Hooker f. & Thomson, Jour. Linn. Soc. **2**:165 (1858) = *Pentapyxis stipulata*, Hook. f.

L. Symphoricarpus, Linné, Spec. Pl. **1**:175 (1753) = *Symphoricarpus orbiculatus*, Mnch.

L. vacciniifolia, hort., ex Dippel, Handb. Laubholzk. **1**:282 (1889) = *Symphoricarpus microphyllus*, HBK.

L. verticillata, Steudel, Nomencl. ed. 2. **2**:67 (1841) = *Loranthus* spec.

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* Apparently a mistake for *Diervilla multiflora* Lemaire.

L. Zeylanica, Gaertner, De Fruct. Sem. Pl. **1**: 132. *pl. 27, 2* (1788) = *Loranthus* spec.

Periclymenum racemosum, Miller, Gard. Dict. ed. 8. (1768) = *Loranthus* spec.

P. verticillatum, Miller, *l. c.* = *Loranthus* spec.

Xylosteum ciliatum β album, Pursh, Fl. Am. Sept. **1**: 161 (1814) = *Symphoricarpus racemosus*, Michx.

EXPLANATION OF PLATES.

The illustrations are from drawings and photographs by the author.

Plate 1. — *Lonicera serpyllifolia*, Rehd. 1, Flowering branch, reduced one-fourth; 2, Pair of leaves, slightly enlarged; 3, Pair of flowers, enlarged; 4, Corolla laid open and style, enlarged; 5, Cross section of ovary, enlarged. — *L. longa*, Rehd. 6, Fruiting branch, reduced one-fourth. — *L. linderifolia*, Maxim. 7, Flowering branch, collected by Faurie, reduced one-fourth; 8, Pair of ovaries, enlarged; 9, Fruiting branch, collected by Tschonoski, reduced one-fourth. — *L. coerulea*, Linn. 10, Longitudinal section of ovary, enlarged; 11, Cross section of ovary, enlarged. — *L. vesicaria*, Komar. 12, Cross section of ovary, enlarged; 13, Longitudinal section of ovary, enlarged.

Plate 2. — *Lonicera Pekinensis*, Rehd. 1, Flowering branch, reduced one-fourth; 2, Half grown leaf, slightly enlarged; 3, Corolla laid open and style, enlarged; 4, Top of ovary with calyx and base of corolla, enlarged; 5, Cross section of ovary, enlarged. — *L. vegeta*, Rehd. 6, Fruiting branch, reduced one-fourth; 7, Young fruit, enlarged. — *L. mucronata*, Rehd. 8, Fruiting branch, reduced one-fourth; 9, Fruit, enlarged. — *L. aemulans*, Rehd. 10, Flowering branch, reduced one-fourth; 11, Pair of ovaries with base of corolla and top of one ovary removed to show the two cells, enlarged.

Plate 3. — *Lonicera Hemsleyana*, Rehd. 1, Flowering branch, reduced one-fourth; 2, Pair of ovaries, enlarged; 3, Corolla, slightly enlarged. — 4, Corolla laid open and style, enlarged. — *L. Setchuensis*, Rehd. 5, Flowering branch, reduced one-fourth; 6, Pair of ovaries, enlarged, anterior view; 7, Pair of ovaries, enlarged, posterior view. — *L. Kabylica*, Rehd. 8, Flowering branch, reduced one-fourth; 9, Pair of ovaries, enlarged; 10, Corolla laid open and style, enlarged. — *L. Tatarica micrantha*, Trautv. 11, Pair of ovaries with base of corolla, enlarged. — *L. floribunda*, Boiss. & Buhse. 12, Pair of ovaries with base of corolla, enlarged. — *L. Korolkovii*, Stapf. 13, Pair of ovaries with base of co-

rolla, enlarged. — *L. Giraldii*, Rehd. 14, Flowering branch, reduced one-fourth; 15, Pair of ovaries, enlarged; 16, Corolla, slightly enlarged; 17, Corolla laid open and style, enlarged.

Plate 4. — *Lonicera dasystyla*, Rehd. 1, Flowering branch, reduced one-fourth; 2, Corolla laid open, enlarged; 3, Pair of ovaries with style, enlarged. — *L. Bournei*, Hemsl. 4, Pair of ovaries and corolla, reduced one-fourth; 5, Corolla laid open, enlarged; 6, Pair of ovaries with style, enlarged. — *L. subaequalis*, Rehd. 7, Flowering branch, reduced one-fourth; 8, Corolla laid open, enlarged; 9, ovary with style, enlarged.

Plate 5. — *Lonicera minuta*, Batal. Photograph, reduced one-half, of type specimen, collected in Kansu by Przewalski (herb. St. Petersburg).

Plate 6. — *Lonicera inconspicua*, Batal. Photograph, reduced one-half, of type specimen, from Tibet, collected by Kachkarov (herb. St. Petersburg).

Plate 7. — *Lonicera Litangensis*, Batal. Photograph, reduced one-half, of type specimen, from Litang, Tibet, collected by Kachkarov (herb. St. Petersburg).

Plate 8. — *Lonicera Szechuanica*, Batal. Photograph, reduced one-half, of type specimen, collected near Tatsien-lu, Szechuen, by Potanin (herb. St. Petersburg).

Plate 9. — *Lonicera cerasina*, Maxim. Photograph, reduced one-half, of type specimen, collected near Yokohama by Maximowicz (herb. St. Petersburg).

Plate 10. — *Lonicera vesicaria*, Komar. Photograph, reduced three-fifths, of type specimen, from Korea, collected by Komarov (herb. St. Petersburg).

Plate 11. — *Lonicera phyllocarpa*, Maxim. Photograph, reduced one-half, of type specimen, from North China, collected by Tatarinov (herb. St. Petersburg).

Plate 12. — *Lonicera bracteolaris*, Boiss. & Buhse. Photograph, reduced one-third, of type specimens, from Tassakenn, Persia, collected by Buhse (herb. Boissier).

Plate 13. — *Lonicera praeflorens*, Batal. Photograph, reduced one-half, of type specimen, from Sedemi River, Mandshuria, collected by Jankowski (herb. St. Petersburg).

Plate 14. — *Lonicera praeflorens*, Batal. Photograph, reduced one-half, of type specimen, from Victoria Bay, Mandshuria (herb. St. Petersburg).

Plate 15. — *Lonicera heteroloba*, Batal. Photograph, reduced one-half, of type specimen, from eastern Kansu, collected by Potanin (herb. St. Petersburg).

Plate 16. — *Lonicera nervosa*, Maxim. Photograph, reduced one-half, of specimen from Kansu, collected by Potanin (herb. St. Petersburg).

Plate 17. — *Lonicera Tschonoskii*, Maxim. Photograph, reduced three-fifths, of type specimen, from Hondo, collected by Tschonoski (herb. St. Petersburg).

Plate 18. — *Lonicera floribunda*, Boiss. & Buhse. Photograph, reduced one-half, of type specimen, from Warahosul, Persia, collected by Buhse (herb. Boissier).

Plate 19. — *Lonicera floribunda*, Boiss. & Buhse. Photograph, reduced one-third, of specimen from Astrabad, Persia, collected by Bunge (herb. Boissier).

Plate 20. — *Lonicera ovalis*, Batal. Photograph, reduced one-half, of tpye specimen, from Tatsien-lu, Szechuen, collected by Potanin (herb. St. Petersburg).

Additions.

p. 97. L. PYRENAICA; add as synonyms —

L. campaniflora, Loudon, Hort. Brit. 471 (1830).
Euchylia Pyrenaica, Dulac, Fl. Haut.-Pyrén. 463 (1867).

p. 105. L. ALPIGENA; add as synonym —

L. alpina, Steudel, Nom. Bot. ed. 2. 1 :278 (1841).

p. 132. L. ARBOREA; add as synonym —

L. ariaefolia, hort., ex Jaeger, Ziergeh. ed. 3. 207 (1889).

p. 139. L. XYLOSTEUM MOLLIS; add as synonym —

L. villosa, "Booth" Kirchner, Arb. Musc. 434 (1864).

p. 129. L. TATARICA PUNICEA —

This form should be referred to *L. Tatarica Sibirica* as a synonym as it is based on *Symphoricarpus puniceus*, Sims.

L. TATARICA LEROYANA —

The plant grown under this name in the Arnold Arboretum is a form or possibly a hybrid of *L. Tatarica;* it is as far as I remember the same as that of the European gardens, and I cannot understand why Zabel refers it to *L. Orientalis*. It is

a compact low and slowly growing shrub with rather short upright branches; leaves oblong-ovate to lanceolate, 5–8 cm. long, rounded at the base, glabrous, bluish-green; flowers small, pink, on short peduncles about 1 cm. long; berries orange. The flowers appear but sparingly and apparently only on older plants.

p. 143. L. QUINQUELOCULARIS; add as synonym —

L. diversifolia quinquelocularis, Zabel in Ruempler, Ill. Gartenbau-Lex. ed. 3. 468 (1901).

p. 162. L. LONGIFLORA; add as synonym —

Caprifolium Nepalense, "G. Don" Loudon, Hort. Brit. 79 (1830). This synonym belongs here according to G. Don, Syst. Gard. Bot. 3:447 (1834), while according to the synonym quoted by Loudon it ought to be referred to *L. macrantha*.

p. 180. L. DIOICA; add as synonym —

? *Caprifolium latifolium*, Kirchner, Arb. Musc. 427 (1864).

p. 191. L. ITALICA; add as synonyms —

Caprifolium Magnevilleae, hort., ex Dippel, Handb. Laubholzk. 1:203 (1889).

Caprifolium Americanum, Kirchner, Arb. Musc. 431 (1864). — Kuntze, Rev. Gen. Pl. 1:274 (1891).

p. 207. After 95 × 96. *L. Xylosteum* × *chrysantha* add —

90 × 96. L. RUPRECHTIANA × CHRYSANTHA, Dippel, Handb. Laubholzk. 1:237 (1889).

L. gibbiflora, Dippel, *l. c.*, not Maximowicz.

L. parviflora, hort., ex Dippel, *l. c.*

L. gibbosa, hort., ex Dippel, *l. c.*

Caprifolium gibbiflorum, Kuntze, Rev. Gen. Pl. 1:274 (1891).

p. 209. L. SEMPERVIRENS × HIRSUTA; add as synonyms —

L. sempervirens Plantierensis, Zabel in Ruempler, Ill. Gartenbau-Lex. ed. 3. 466 (1901).

L. sempervirens Youngii, Zabel, *l. c.* 467.

p. 214. After *Caprifolium Indicum* add —

CAPRIFOLIUM RUBRUM, Rafinesque, Fl. Ludov. 78 (1817).

Either *L. sempervirens* or not belonging at all to the genus.

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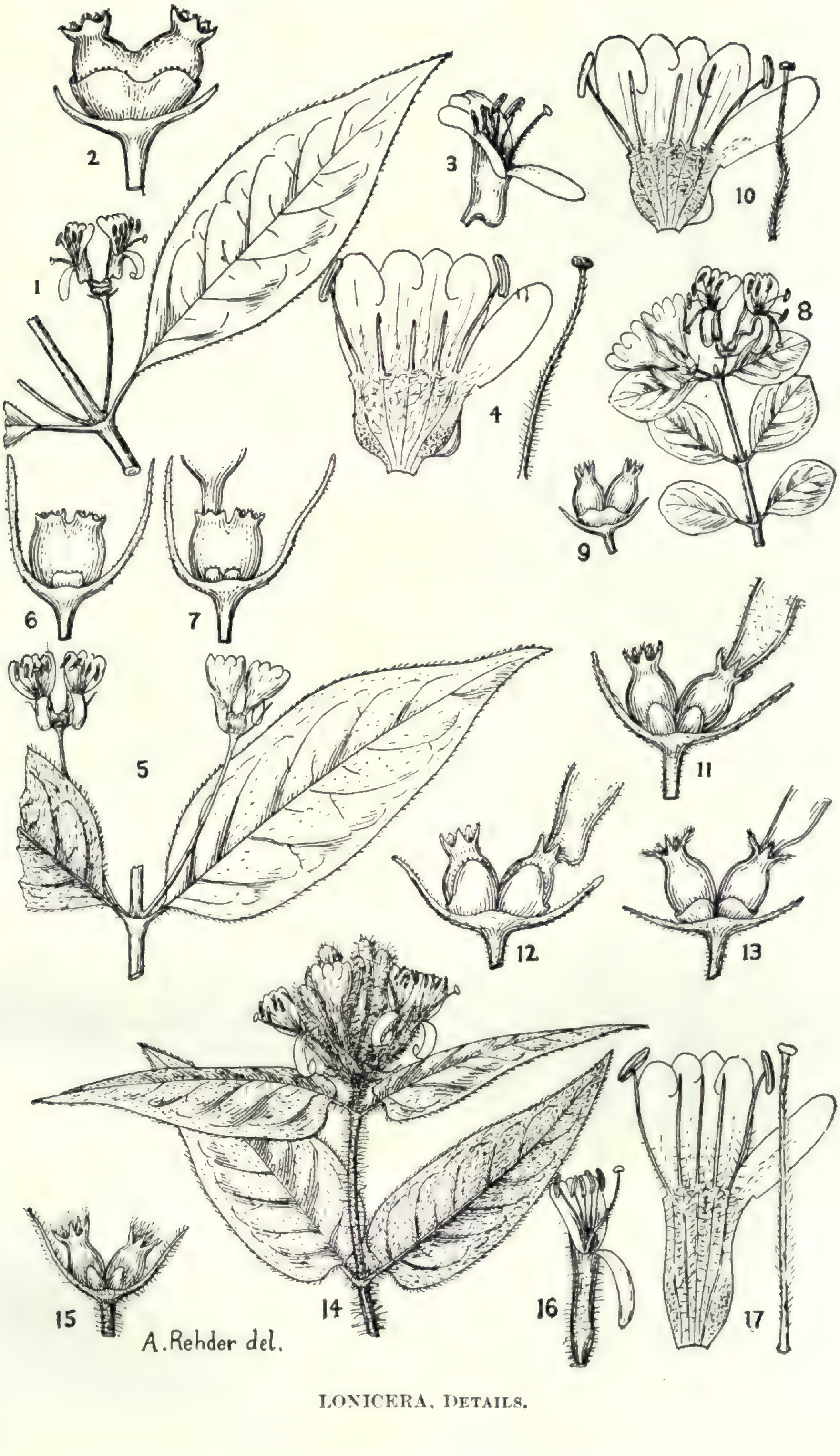
LONICERA, DETAILS.



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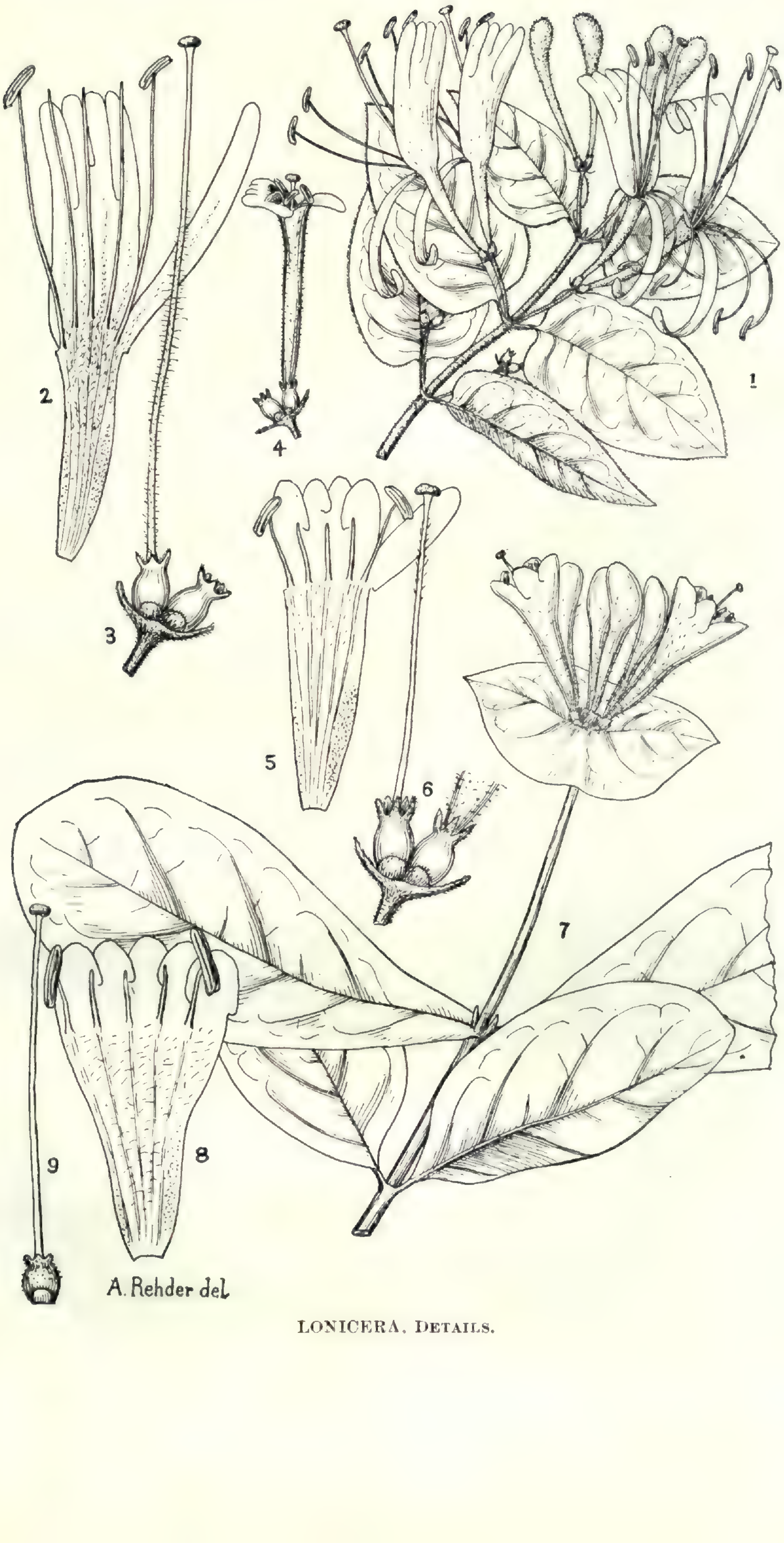

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LONICERA CERASINA.

LONICERA VESICARIA.

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LONICERA OVALIS.

LIBRARY CONTRIBUTIONS.

A SUPPLEMENTARY CATALOGUE OF THE STURTEVANT PRELINNEAN LIBRARY.

BY C. E. HUTCHINGS.

During the few years immediately succeeding the publication of the catalogue of the Sturtevant Prelinnean Library,* a good many works belonging to the period before 1753 were discovered in the course of recataloguing the general library of the Missouri Botanical Garden. A very small number of early works were also received from Dr. E. L. Sturtevant, too late for inclusion in the former catalogue, and a few came in the usual course from various sources, by donation or purchase. The titles of these Prelinnean works were brought together, and their publication in a supplementary list was projected,† but for lack of space in the Garden Report was deferred from year to year. Last year a large collection of old books, brought together in Europe, was purchased through a foreign dealer, and so large a proportion of these was Prelinnean, and not hitherto represented in the Garden library, that the early publication of a catalogue exhibiting such additions, from all sources, seemed highly desirable. The present catalogue is the result.

The older catalogue and the present one therefore set forth the titles of all of the Prelinnean books and pamphlets at the Garden, without duplication, except that a very few entries are repeated in this list to correct errors

* Rept. Mo. Bot. Gard. 7: 123–209. 1896.

† Rept. Mo. Bot. Gard. 10: 20. 1899.

in the former one. All of the works embraced in the two lists will be found together on the shelves, arranged in one alphabet, or represented in their proper places by dummies showing their location.

The aim has been to make this catalogue both useful and accurate. Unusual difficulties are met with in dealing with older works, and it is hoped that users will find that a solution of these problems has been approximated. No single bibliographic work sheds sufficient light on all the dark passages that must be threaded in such an undertaking, and there are many cases in which little or no help can be obtained in answering the many nice questions presented. The works most frequently consulted have been those of Seguierius, Pritzel, Haller and Meyer. The patient erudition displayed in these guides has enabled me to reduce the number of errors which without such help would have appeared in this catalogue. I wish to record here also my grateful acknowledgment of the courteous assistance and advice given by Dr. William Trelease.

This catalogue follows closely the style and arrangement employed in the older one. The intention has been always to reduce authors' names to the nominative case, following the idiom of the language in which the title-page is printed, and this has resulted frequently in the appearance of an author's name under several different spellings. Where this practice has caused the separation of the works of an author, or has thrown them where they would not ordinarily be sought, cross-references have been freely employed to aid the user of the catalogue. Indeed, in the entire list, I have preferred to err rather in the way of using too many cross-references than too few.

It will be observed that no liberties in the way of paraphrasing or changing titles have been taken, except in a few cases where the fact is shown by the use of brackets. An exact rendition of the author's name and the title, in an intelligible form, has been the aim in all cases. Any mat-

ter omitted from a title-page, after the citation of the title proper has begun, is represented by asterisks, until the date is reached, where less formality is observed. Words, letters or even punctuation points supplied are bracketed. Dates, names or parts of names, and all extraneous matter, derived from a preface, portrait, or other source outside of the title-page, are inclosed in brackets, except when derived from a colophon. Occasionally there is a discrepancy between a title-page date and that given in the colophon, and in such a case the latter is likely to be the more trustworthy, as marking the actual printing of the last sheet, while the title-page may have been engraved in advance, with a date showing the anticipated time of publication.

Where supplementary papers by authors other than the principal author are added to a work, and specifically and sufficiently indicated in the title-page, they are not catalogued as separate works, even though in some instances separately paged, — the practice in the pagination of the older works being neither uniform nor consistent, — but cross-references to the added or included papers are always given. In some particular cases, the included mention in the title-page is purposely omitted in the citation of the main work, to permit of the logical citation of the additions as separate works.

Accents omitted, for typographical reasons, from letters on title-pages are not supplied in this catalogue. A few obvious misprints are corrected, — always in brackets, — or occasional reference is made to an uncorrected error.

The old Umlaut in the German and the Swedish, consisting of a minute e placed directly above the vowel, is for reasons of convenience represented in this list by the modern form. The digraphs æ and œ are separated into their constituent elements, chiefly for the sake of uniformity with other publications in the Garden Report. Some few accents and diacritical marks of an unusual char-

acter have been omitted, especially from names printed in bold-faced letters. With these exceptions, the intention has been to follow carefully the typography of the title-pages. Even the v used generally for our more modern u, and the u occasionally used for our v, have been carefully preserved. Contrary to a somewhat prevalent impression, the v is not invariably found in lines of capital letters, in the older books, nor the u always in lower-case lines. The difference between the u and the v, as we know them, has been allowed to affect the alphabetizing of entries, though not to the extent of causing the separation of entries of different editions of the same work, or the disturbance of their chronological sequence.

Academia Caesareo-Leopoldina Natvrae Cvriosorvm : Ephemerides sive observationvm medico-physicarvm à celeberrimis viris tum medicis, tum aliis eruditis in Germania & extra eam communicatarum.—Francofvrti & Lipsiae, centvriae I & II, 1712; Noribergae, centvriae III & IV, 1715; V & VI, 1717; VII & VIII, 1719. 8 centuries, with appendices, in four vols. sq. O. (20.8x16.5).

DE **Acosta,** Iosephus: Historie naturael en morael van de Westersche Indien. Waer inne ghehandelt wort van de merckelijckste dinghen des hemels/ elementen/ metalen/ planten ende gedierten van dien: * * * Ghecomponeert door Iosephum de Acosta, * * * : Wt den Spaenschen in onse Nederduytsche tale overgheset: door Ian Huyghen **van Linschoten.** De tweede editie. —'t Amsterdam, 1624. 1 vol. sq. O. (20.4x15.6).

Acta Helvetica, physico-mathematico-botanico-medica, figuris nonnullis aeneis illustrata, & in usus publicos

exarata. — Basileae, vol. I, 1751; II, 1755; III, 1758. 3 vols. in two. sq. O. (20.6x16.5).

Agrippa, Henricus Cornelius: De incertitudine & vanitate omnium scientiarum & artium liber, lectu plane jucundus & elegans. Cum adjecto indice capitum. Accedunt duo ejusdem auctoris libelli; * * *. — Francofurti & Lipsiae, 1693. 1 vol. nar. T. (13.8x8).

The two works referred to as appended are of no botanical interest.

Alamanni, Luigi: La coltivazione, e gli epigrammi di Luigi Alamanni, e le api di Giovanni **Rucellai,** * * * colle annotazioni del Signor Dottor Giuseppe **Bianchini** da prato sopra la coltivazione; e di Roberto **Titi** sopra le api. Con la vita dell' Alamanni scritta dal Signor Conte Giammaria **Mazzuchelli** * * *, e con uno dotta lettera del Sig: Giovanni **Checozzi** Vicentino. — In Venezia, 1751. 1 vol. D. (17.8 x11.1).

Albers, Joan. Franc. Herm.: De alimentis, quibus Graeci Hippocratis aetate utebantur * * *. — Bonnae, 1828. — Bound with **Sprengel,** C., De Frumentorum.

Albertus de Bollstaedt; — See ALBERTUS MAGNUS.

Albertvs Magnvs: De secretis mvliervm. Item de virtutibus herbarum[,] lapidum et animalium. — Amstelodami, 1655. 1 vol. nar. T. (13.5x7.7).

Seguierius says of the second work: "Hic liber juxta quosdam auctores, falso Alberto Magno tribuitur."

Albertus Magnus: De vegetabilibus libri VII, historiae naturalis pars XVIII. Editionem criticam ab Ernesto **Meyero** coeptam absolvit Carolus **Jessen.** — Berolini, 1867. 1 vol. O. (23.1x14.7).

Aldinus, Tobias: Exactissima descriptio rariorvm qvarvndam plantarvm, qu[a]e continentur Rom[a]e in horto Farnesiano: * * *. — Romae, 1625. 1 vol. F. (32x21.8).

Pritzel ascribes the authorship of this work to Petrus Castellus, citing Seguierius in support of the statement; but Seguierius, Bibl. Bot., editions of 1740 and 1760, cites the work as that of Aldinus.

Aldrovandi, Ulisse: Oreste **Mattirolo**[:] L'Opera botanica di Ulisse Aldrovandi (1549–1605). — Bologna, 1897. 1 vol. O. (24.4x17).

Aldrovandi, Ulisse: O. **Mattirolo**[:] Illustrazione del primo volume dell' erbario di Ulisse Aldrovandi. — Genova, 1899. 1 vol. O. (24.3x16.7).

Alphita. A medico-botanical glossary from the Bodleian manuscript, Selden B. 35[.] Edited by J. L. G. **Mowat,** * * *. — Oxford, 1887. 1 vol. sq. O. (22.5x19.2).

Mr. Mowat believes that "the date of the Bodleian MS. may be about 1465," and says that "the Sloane MS." (on which alone the text rests from page 172 to the end) "is certainly earlier." The British Museum Catalogue attributes this MS. Sloane 284 to John **Bray,** but Mr. Mowat doubts whether there is sufficient reason for so assigning it.

Alpinus, Alpinus; — See ALPINUS, P., De pl. ex.

Alpinus, Prosper: De plantis exoticis libri duo * * *. Opus completum, editum studio, ac opera Alpini **Alpini** * * *. — Venetiis, 1629. 1 vol. sq. O. (20.5x15.2).

Alpinus, Prosper: De balsamo, dialogvs. * * * — Patauii, 1639. 1 vol. sq. D. — Bound with **Alpinus,** P., De pl. Aegypti liber, 1640.

Alpinus, Prosper: De plantis Aegypti liber. Cum observationibus & notis Ioannis **Veslingii** * * *. — Patavii, 1640. 1 vol. sq. D. (19.9x15.4).

Alpinus, Prosper: Historiae Aegypti naturalis pars prima. Qua continentur rerum Aegyptiorum libri quatuor. Opus posthumum nunc primum ex auctoris autographo, diligentissime recognito, editum; * * *. [——] Historiae naturalis Aegypti pars secunda, sive, de plantis Aegypti liber auctus & emendatus. Accedunt tabellae aeneae LXXVII. plantis summo artificio incisis; ut & dissertatio ejusdem de Laserpitio, & Loto Aegyptia.

Cum observationibus & notis Joannis **Veslingii**, * * *. Accessit ejusdem Joannis **Veslingii** paraeneses ad rem herbariam & vindiciae Opobalsami cum indicibus necessariis. — Lugduni Batavorum, parts I–II, 1735. 2 vols. sq. Q. (26.7x20.5).

Amathus Lusitanus; — See MATTHIOLUS, P. A., 1558, 1560.

Amatus Lusitanus; — See MATTHIOLUS, P. A., 1674.

Amatvs Lvsitanvs; — See DIOSCORIDES, [P.], 1554; MATTHIOLUS, P. A., 1598.

Ambrosi, F.; — See MATTIOLI, 1882.

Ambrosinus, Hyacinthus: Phytologiae hoc est de plantis partis primae tomus primus. In quo herbarum nostro seculo descriptarum, nomina, aequiuoca, synonyma, ac etymologiae inuestigantur. Additis aliquot plantarum viuis iconibus. Opus in omni scientiarum genere studiosis vtilissimum, lexiconquè botanicum absolutissimum; cum indice trilingui copiosissimo. — Bononiae, 1666. 1 vol. F. (30.4x20.7).

Seguierius says: "Opus imperfectum remnansit, auctore morte sublato: & altera pars nunquam prodiit."

Amherst, Alicia: A history of gardening in England * * * Second edition. — London, 1896. 1 vol. Q. (25.9x17.3).

Amherst, Alicia: Bibliography of works on gardening. Reprinted from the second edition of "A History of gardening in England." * * * — London, 1897. 1 vol. Q. (26x16.5).

Amherst, Alicia M. Tyssen; — See GARDENER, Ion.

Amherst, Alicia M. Tyssen; — Now Mrs. Evelyn **Cecil**.

Ammannus, Paulus: Character plantarum naturalis, à fine ultimo videlicet frvctificatione desvmtvs, ac praemisso fundamento methodi genuinae cognoscendi plantas, per canones et exempla digestvs studio D. Pauli Ammanni, nunc vero auctior & correctior redditus, notisque illustratus à Daniele **Nebelio**, * * *. — Francofvrti ad Moenvm, 1701. 1 vol. nar. T. (14.7x8).

Ammannus, [P.]; — See VOLCKAMERUS, 1700.

Anchersen, [J. P.]; — See PLINIUS Caecilius Secundus, C.

Andromachus Senior: Antiqvissimvm de theriaca carmen ad Imperatorem Neronem[,] recvsvm occasione theriacae recens paratae in officina Leinkeriana. — Norimbergae, 1754. Pamphlet. sq. O. (24.9x19.9).

Text in Latin and Greek. Andromachus the Elder was physician to the Emperor Nero.

Antonius Benivenius; — See GALENVS, C., [et al.], 1528.

Apuleius, L.; — See SORANUS [et al.], 1528.

Apvleivs, L.; — See SORANUS [et al.], 1528.

Apvleivs Platonicvs; — See GALENVS, C., [et al.], 1528.

Apvlevs, L.: De medicaminibvs herbarvm. — See MVSA.

Aquaeus, Stephanus; — See PLINIVS, 1530.

Aretius, Benedictus; — See CORDUS, V.

DE Aromatariis, Iosephus: De rabie contagiosa, magni momenti affectv, discvrsvs, cvi epistola de plantarvm ex seminibvs generatione praeposita est, qua detegitur, in vocatis seminibus contineri plantas verè conformatas, vt dicunt, actu. * * * — Francofvrti, 1626. 1 vol. sq. O. (22.2x18.2).

[**Astruc,** J.]: Memoires pour l'histoire naturelle de la province de Languedoc, * * *. — A Paris, 1740. 1 vol. sq. Q. (25.5x19.4).

Atti, G.; — See MALPIGHI.

Avantius, Carolus; — See FIERA, B.

Averroes; — See SERAPIO, Ioan., [et al.].

Barbarus, H.; — See DIOSCORIDES, 1530; PLINIUS, 1492–93, 1669–68.

Bartholinus, Caspar; — See BARTHOLINUS, T., 1668.

Bartholinus, Thomas: Epistolarum medicinalium à doctis vel ad doctos scriptarum, centuria I. & II. * * *. — Hafniae, 1663. 1 vol. nar. S. (15.8x9.5).

Bartholinus, Thomas: Dissertatio de Cygni anatome, ejusq[ue] cantu, à Johanne Jacobo **Bewerlino** in Academia Hafniensi olim subjecta, nunc notulis qvibusdam auctior edita ex schedis paternis à Casparo **Bar-**

tholino Thomae filio. — [Hafniae], 1668. 1 vol. S. (17x11.3).

Bartholinus, Th.: Dissertatio prima de theriaca in officina Christophori Heerford * * * 1. Febr. 1671. dispensata. — Hafniae, 1671. Pamphlet. sq. D. (19.7x15.2).

Bartholinus, Th.: Dissertatio secunda de theriaca in officina Joh. Gothofredi Becker * * * 1. Febr. 1671. dispensata. — Hafniae, 1671. Pamphlet. sq. D. (19.7x15.2).

Bausch, Joh. Laurentius; — See FEHR, J. M., 1666.

Bavhinvs, Caspar; — See MATTHIOLUS, P. A., 1598, 1674.

[**Bazin,** G. A.]: Observations sur les plantes et leur analogie avec les insectes, * * *. — Strasbourg, 1741. 1 vol. D. (18.5x12.2).

Beale, [John]: Aphorisms concerning cider.—In [**Evelyn**], Pomona, 1664, pp. 21–29.

Beale, [John]: General advertisements concerning cider.—In [**Evelyn**], Pomona, 1706, pp. 85–94; [1729], pp. 73–82.

Beale, J.; — See E[VELYN], Sylva, 1664.

Beale, J.; — See EVELYN, Silva, 1706, 1729.

Beckerus, Joh. Conradus; — See VALENTINI, M. B., 1716.

[**Bejthe,** Stephan]: Stirpivm nomenclator Pannonicvs. — Antverpiae, 1584. — With **Clvsivs,** Rar. aliq. stirp., 1583.

Concerning the authorship of this work, see Pritzel, Thesaurus, 1872, No. 583, note.

Bellonius, P.: De arboribvs coniferis, resiniferis, aliis quoque nonnullis sempiterna fronde virentibus, cum earundem iconibus ad viuum expressis. Item de melle cedrino, cedria, Agarico, resinis, et iis quae ex coniferis proficiscuntur. * * *—Parisiis, 1553. 1 vol. sq. O. (22.2x16).

Bellonius, P.: De admirabili opervm antiqvorvm et rerum suspiciendarum praestantia liber primus. De medicato

funere, seu cadauere condito, et lugubri defunctorum eiulatione. Liber secundus. De medicamentis nonnullis, seruandi cadaueris vim obtinentibus. Liber tertius. * * *—Parisiis, 1553. 1 vol. sq. O.—Bound with **Bellonius,** De arb. conif., 1553.

Belon, Pierre: Les observations de plvsievrs singvlaritez & choses memorables, * * *.—Anvers, 1555. 1 vol. S. (15.3x11).

Belon, Pierre: Les observations de plvsievrs singvlaritez et choses memorables, trovvees en Grece, Asie, Iudée, Egypte, Arabie, & autres pays estranges, * * *.—A Paris, 1588. 1 vol. O. (24x16.7).

Belon, Pierre; —See also BELLONIUS, P.

Benivenius, Antonius; —See ANTONIUS BENIVENIUS.

DE **Bergen,** Carolvs Avgvstvs: Flora Francofvrtana methodo facili elaborata[;] accedvnt cogitata de stvdio botanices methodice et qvidem proprio Marte addiscendae, terminorvm technicorvm nomenclator, et necessarii indices.—Francofurti ad Viadrum, 1750. 1 vol. S. (16.8x10.2).

Beringer, Joannes Bartholomaeus Adamus: Lithographiae Wirceburgensis, ducentis lapidum figuratorum, a potiori insectiformium, prodigiosis imaginibus exornatae specimen primum, * * * publicae litteratorum disquisitioni submittit Georgius Ludovicus **Hueber** * * *.— Wirceburgi, 1726. 1 vol. F. (35x21.8).

Beslervs, Basilivs et Michael Rvpertvs; —See LOCHNERVS, M. F., Rar. Mvs. Besler., 1716.

Betulius, J. G; —See E[RNDL], C. H., 1711.

Bewerlinus, Johannes Jacobus; —See BARTHOLINUS, T., 1668.

Bianchini, Giuseppe; —See ALAMANNI, 1751.

[**Bible,** The]; —See CALLCOTT, M., 1842; HAYNALD, 1894; LOCHNERUS, M. F., Ner. s. Rhododaphne, 1716; NIEREMBERGIVS, I. E., 1635; VALLESIUS, F., 1595.

Blackwell, Elisabeth: Nomenclator Linnaeanus in Elisabeth Blackwell Herbarium selectum emendatum et auctum etc. * * * a C. G. **Groening.** — Lipsiae, 1794. 1 vol. O. (20.9x12.8).

Boccone, Pavlvs: Icones & descriptiones rariorum plantarum Siciliae, Melitae, Galliae, & Italiae. Quarum unaquaeque proprio charactere signata, ab aliis ejusdem classis facile distinguitur. * * *— [Oxonii], e Theatro Sheldoniano, 1674. 1 vol. sq. O. (23.9 x18.2).

Boccone, Pavlo: Mvseo di fisica e di esperienze variato, e decorato di osservazioni natvrali, note medicinali, e ragionamenti secondo i principij de' moderni. * * * Con vna dissertazione dell' origine, (alla p. 262) della prima impressione delle produzzioni marine, come fucus, coralline, zoophite, spongie, ed anche, intorno l' originè dè funghi, con figure in rame. * * *— In Venetia, 1697. 1 vol. O. (23x17).

After indicating his several titles, the author says: "Ed al presente Don Silvio Boccone;" and the inscription on the frontispiece portrait is "D. Paulus Boccone, modó Sylvius."

Boccone, Pavlo: Mvseo di piante rare della Sicilia, Malta, Corsica, Italia, Piemonte, e Germania * * *. Con l' appendix ad libros de plantis Andreae **Caesalpini,** e varie osservazioni curiose con sue figure in rame. * * * — In Venetia, 1697. 1 vol. O. (23.6x16.7).

As in the preceding work of the same date, the author indicates the change of his name to Silvio Boccone.

Bock, Hieronymus: Kreüter Büch. * * * — Strassburg, 1560. 1 vol. F. (33x20.8).

Boehmervs, Georg. Rvdol.: Flora Lipsiae indigena. — Lipsiae, 1750. 1 vol. nar. O. (20.5x11.8).

Boehmer's herbarium is in the possession of the Missouri Botanical Garden. — See Rept. Mo. Bot. Gard. 9 : 14. 1898.

Boerhaave, Hermannus: Index alter plantarum quae in horto Academico Lugduno-Batavo aluntur * * *.—

Lugduni Batavorum, 1720. 1 vol. sq. O. (23.4x17.9). — Imperfect: lacks most of the prefatory matter.

Whether the present copy is actually of the edition of 1720 (an authentic title-page of which is prefixed to it) is a matter of reasonable doubt. In typographical details it agrees very closely with the catalogued copy of the edition of 1727. Pritzel says of the 1727 edition, "praeter titulum non differt."

Boerhaave, Hermannus: Historia plantarum, quae in horto Academico Lugduni-Batavorum crescunt * * *. — Londini, pars I, II, 1731. 2 vols. nar. S. (17x10).

[**Boerhaave,** H.]: Museum Boerhavianum sive catalogus supellectilis splendidissimae, quae usus est vir celeberrimus H. Boerhaave; complectens praeparata chemica, propriâ Cl. defuncti arte elaborata, tum collectionem amplam plurimorum animalium exoticorum vel siccatorum, vel liquore conditorum, insuper thesaurum completissimum plantarum submarinarum omnis generis, ac denique instrumenta physica, mathematica, astronomica, musica, &c. Auctio fiet in officina **Luchtmanniana,** * * *. — Lugduni in Batavis, apud Samuelem **Luchtmans,** 1739. Pamphlet. D. (18.6x11.5).

Boerhaave, Hermannus; — See DALE, S., 1751.

Bohun, R.; — See EVELYN, Silva, 1706, 1729.

Bonamicus, Lazarus: Carmen ervditissimvm * * * de vita rustica. — In **Camerarius,** *'Εκλεκτὰ γεωργικὰ*, 1596.

DE **Boot,** Anselmus Boëtius: Florum, herbarum, ac fructuum selectiorum icones, & vires plerae[que] hactenus ignotae. E bibliothecâ OlivarI **VredI** I. C. Brugensis. — Brvgis Flandorvm, 1640. 1 vol. ob. S. (15.1x22.6).

The title-page is inscribed: "Donum Clariss. H. Sloan M. D. & S. Regal. Societ. Jacobi Petiver ejusd. Societ. S."

Boyle, Robert: The philosophical works of the Honourable Robert Boyle Esq; abridged, methodized, and disposed under the general heads of physics, statics, pneumatics, natural history, chymistry and medicine. * * *

By Peter **Shaw**, M. D. — London, 1725. 3 vols. sq. O. (23x17.5).

Boyle, R.; — See GREW, BOYLE & DEDU, 1763; GREW & BOYLE, 1685.

Bradley, Ricardus: Plantarum succulentarum: complectens, hasce insequentes plantas, Aloen scilicet, Ficoiden, Cerei, Melocardum aliasque ejus generis, quae in horto sicco coli non possunt. Secundum prototypum, putà naturam, in tabellis aeneis insculptas. Earundem descriptiones huc accedunt, & cultura. — Londini, decade I, 1716; II, 1717; III, 1725; IV, V, 1727. 5 decades in one vol. sq. O. (24.7x18.7).

Text in both Latin and English.

Bray, John; — See ALPHITA.

Breynius, Jacobus: Exoticarum aliarumque minus cognitarum centuria prima, cum figvris aeneis svmmo studio elaboratis. * * * — Gedani, 1678. 1 vol. F⁴. (39x24).

Author's signed copy, No. 15. Differs in title-page and order of pages from the copy in older catalogue (Rept. Mo. Bot. Gard. 7: 135. 1896.)

Britten, James; — See TURNER, W.

Browallius, Johannes: Examen epicriseos in systema plantarum sexuale Cl. Linnaei, anno 1737. Petropoli evulgatae, auctore Jo. Georgio **Siegesbeck** * * * jussu amicorum institutum a Johanne Browallio. [Reimpressum est cum Linnaei Oratione de necessitate peregrinationum intra patriam, Lugduni-Batavorum, 1743]. — Pamphlet. O. (20x12.7).

Brunfelsius, Otho; — See PAVLVS AEGINETA; SERAPIO, Ioan., [et. al.].

Brunfelss, Otho: Kreüterbůch contrafayt/ vollkummen/ nach rechter/ warer Beschreibung der alten Leerer vnd Ärtzt. * * * — Strasszburg, 1534. 1 vol. sq. D. (18.2x14).

Lacks several leaves.

Brvckmannvs, F. E.: Specimen privs botanico-medicvm exhibens frvticem Koszodrewina, eivsqve balsamvm Koszodrewinowy oley dictvm. Cvm figvr. — Brvnsvigae, 1727. Pamphlet. sq. O. (20.4x16.5).

Brv̈ckmannvs, Franciscus Ernestvs: Centvria epistolarvm itinerarivm. Accedit epistola I. G. **Bv̈chneri,** * * * de memorabilibvs Voigtlandiae svbterraneis. — Wolffenbvttelae, 1742. In 2 vols. sq. O. (21.5x17.2).

The first volume contains the general title-page, the epistle by Bv̈chnervs, and epistles 1–50 by Brv̈ckmannvs, with individual title-pages, dated Lycopol., Wolffenb., 1728–1736. The second volume contains epistles 51–100, with similar title-pages, dated Lycopol., Wolffenb., 1735–1741.

Brv̈ckmannvs, Franciscvs Ernestvs: Centvria secvnda epistolarvm itinerarivm. Accedit Mvsevm Closterianvm. — Wolffenbüttelae, 1749. In 2 vols. sq. O. (21.5x17.2).

The first volume contains the general title-page and epistles 1–59, dated (at end of each epistle) 1744–1747. The second volume contains epistles 60–100, dated (at end of each epistle) 1747–1748, and Mvsevm Closterianvm, 1746.

[**Brv̈ckmannvs,** Franciscvs Ernestvs: Centvria tertia epistolarvm itinerarivm. — Wolffenbüttelae, 1750–1751]. 1 vol. sq. O. (21.5x17.2).

Contains epistles 1–50 only, dated (at end of each epistle) Lycopol., Wolffenb., 1750–1751.

DE Bry, Iohannes Theodorus: Florilegium novum, hoc est: variorum maximeque rariorum florum ac plantarum singularium unà cum suis radicibus & cepis, eicones diligenter aere sculptae & ad vivum ut plurimum expressae. * * * — Oppenheim, 1612.[—] Augmentatio uberior florilegij antehac coepti, jam iterum locupletati, floribus nonnullis exoticis, visu jucundis. * * * — [Oppenheim?], 1614.— The two parts together in 1 vol. F. (32.6x21).

There are 7 pages of text and 112 plates, of which 31 plates appear to constitute the second part.

Büchnerus, Andreas Elias: De Fraxinella, * * *.— Erfordiae, 1742. Pamphlet. sq. D. (19.8x16.3)

Büntingen, Johann Philipp: Sylva subterranea oder: vortreffliche Nutzbarkeit des unterirdischen Waldes der Stein-Kohlen / wie dieselben von GOtt denen Menschen zu gut / an denenjenigen Orthen / wo nicht viel Holtz wächset / aus Gnaden verliehen und mitgetheilet worden / * * * — Halle, 1693. 1 vol. S. (15.8x9.8).

DE **Buffon**; — See HALES, [S.], 1735, 1779–80.

Burmannus, Joannes; — See [VAN RHEEDE tot Draakestein, H. A.], 1769.

Bvchnervs, I. G.; — See BRVCKMANNVS, F. E., 1742.

Bvrckhard, Io. Henr.: Epistola ad * * * Godofredvm Gvilielmvm Leibnitivm polyhistorem consvmmatissimvm qva characterem plantarvm natvralem nec a radicibus, nec ab aliis plantarum partibus minus essentialibus, pluribus discriminandi capitibus constitutis, peti posse ostendit, simulque in comparationem plantarum, qvam partes earvm genitales svppeditant paucis inquirit Io. Henr. Bvrckhard Med. Doct. Cvm Lavrentii **Heisteri** praefatione, qua de origine methodi plantarum huiusque inventoribus, de methodis ipsis earumque veris auctoribus agit, & deinde quod auctor huius epistolae inventor sit methodi sexualis, ac sic simul huius Burckhardi, Ioach. Camerarii & Ioach. Iungii, trium excell. botanicorum Germanorum merita in methodum botanicam, vulgo hucusque neglecta, ostendit, aliaque ad historiam rei herbariae & botanicam ipsam illustrandam, una cum duobus novis plantarum generibus, Iungia & Burcardia earumque iconibus proponit. — Helmstadii, 1750. 1 vol. sq. O. (21.2x15.8).

Bvrghartvs, Gothofr. Henr.: Iter Sabothicvm, das ist: ausführliche Beschreibung einiger An. 1733 und die folgenden Jahre auf den Zothen-Berg gethanen Reisen,

wodurch sowohl die natürliche als historische Beschaffenheit dieses in Schlesien so bekannten und berühmten Berges der Welt vor Augen geleget wird. * * * —Breszlau und Leipzig, 1736. 1 vol. nar. D. (17.5 x10.7).

Caesalpinus, Andreas: Theodori **Caruelli** illustratio in hortum siccum Andreae Caesalpini. —Florentiae, 1858. Pamphlet. D. (18.5x12).

Caesalpinus, Andreas; —See Boccone, Mvseo di piante rare, 1697.

Caesalpinus, Andreas; —See also Cesalpino, Andrea.

Calceolarius, Franciscus: Iter Baldi Montis. —[Veronae, 1593]. —With **Oliuus**, De recond., 1593.

Calceolarius, Franc.; —See Chioccus, A., 1622; Oliuus, J. B., 1593.

Callcott, Maria: A Scripture herbal. * * * —London, 1842. 1 vol. O. (21.3x15).

Camelli, George-Joseph; —See Matière Médicale.

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W. Junk, of Berlin, writes as follows of the collection of the works of Rivinus catalogued under the foregoing titles: —

"Das einzige gleich vollständige Exemplar, welches existirt. * * * Schon der alte Sprengel nennt das Buch ein 'opus rarissimum.' Speciell die Tafeln 'Ordo flore hexapetalo,' die C. G. **Ludwig** lange nach dem Tode des Autors herausgegeben hat, sind von einer ausserordentlichen Seltenheit. Linné, Seguier, Cobres und andere Forscher und Bibliographen kennen diesen Theil nicht. Pritzel hat ihn nur in einem Exemplar mit 17 Tafeln, dem in der Bibliothek DeCandolle befindlichen, gesehen. * * * Jedoch der VI. Theil, der erst viel später erschien, dürfte wohl nur in [diesem] Exemplar erhalten geblieben sein. Huth hat ihn in den vielen Bibliotheken, die er durchforscht hat, nirgendswo gesehen."

Rivinus, Augustus Quirinus: De methodo plantarum * * * Augusti Quirini Rivini * * * epistola ad Joan. **Raivm**, cum ejusdem responsoria: in qua D. Josephi Pitton Tournefort, M. D. Elementa botanica tanguntur. — Londini, 1696. 1 vol. D. — With **Raius**, Syn. meth. stirp., 1696.

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By Michele **Tenore**.

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wächse, Bäume, Stauden und Kräuter, welche in allen vier Theilen der Welt, sonderlich aber in Europa, hervorkommen, neben ihren sonderbaren Eigenschaften, Tugenden, und vortrefflichen Wirkungen, auch vielen herrlichen Artzneymitteln und derer Gebrauche, wider allerley Krankheiten an Menschen und Vieh, mit sonderbarem Fleisz auf eine gantz neue, beliebte Art und Weise, dergleichen in andern Kräuterbüchern nicht zu finden, beschrieben, auch mit schönen nach der Natur gezeichneten Figuren gezieret, und neben den ordentlichen, so wohl Kräuter- als Krankheits-Registern, mit nützlichen Marginalien vorgestellet sind. * * * Itzo auf das Neue übersehen, und mit vielen Beschreibungen und Figuren der Kräuter vermehret durch Friedrich **Zwinger,** des seel. Authors Sohn, * * *. — Basel, 1744. 1 vol. F⁴. (37.4x23.5).

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